ICON·S WORKING PAPER SERIES

THE DEMAND FOR LAND: RETHINKING LAND USE MANAGEMENT AND REGULATION

Barbara L. Boschetti

Paper presented at the ICON·S Inaugural Conference (Florence, June 26-28, 2014)

ICON·S Working Paper – Conference Proceedings Series 1 No. 9/2015

The International Society of Public Law (ICON·S)

ICON·S was established in 2014. The initiative to create it emerged from the Editorial Board of I·CON – the International Journal of Constitutional Law. To learn more: www.icon-society.org.

ICON·S Working Papers – Conference Proceedings Series

The ICON·S WP Conference Proceedings Series features papers presented at the Annual ICON·S Conferences. The responsibility for the content of the working papers lies entirely with the author. ICON·S makes no warranties or representations as to the accuracy or suitability of the content of the papers. The ISSN is kindly provided by the Institute for Research on Public Administration (IRPA) (www.irpa.eu).

Cite as:

Barbara L. Boschetti, "The demand for land: rethinking land use management and regulation", ICON·S Working Paper – Conference Proceedings Series 1, no. 9/2015.

International Society of Public Law (ICON·S) (www.icon-society.org)

ICON·S Working Papers - ISSN 2280-868X

The demand for land: rethinking land use management and regulation

Barbara L. Boschetti

Associate Professor of Administrative law

Catholic University of Milan – Faculty of political and social sciences

barbara.boschetti@unicatt.it

Abstract

This article aims to bring to light the most important issues connected to land and land use management.

New challenges to be faced by public policies emerge: sustainable development processes and resilient communities ask for a different approach to land and land use management and imply a redefinition of institutional boundaries, following the deep interconnection among all ecosystem components. In this scenario, urbanization processes attract more attention because they are directly linked to "land take/consumption" and held responsible for soil sealing. This notwithstanding, all land and land use transformations are to be taken into account, even the ones affecting undeveloped lands (agricultural, green, open lands).

The comparative analysis of land (and land use) management approaches on the one hand helps to understand the limits of traditional spatial and urban planning tools and of mere quantitative thresholds; on the other hand it brings to light several best practices and new legal solutions.

1. Land (and legislation) beyond traditional boundaries

Through the ages land has always held a privileged position in the legal environment: it has been a key factor in the history of Nations; it has influenced the development of legal

systems[1] and institutional models; it has been a life-giving and life-preserving source; it has provided the space for the development of human activity; land has always been a symbol of power, involving relevant legal and justice issues [2].

In line with "normativistic" theories, the law has tried in several ways to rid itself of the concreteness of land, to do away with boundaries and spatial limits, to substitute the physical, horizontal and fixed attributes of land with an abstract notion of "space" defined by rules and regulations. Some of these aspects are of great interest to us in the present case: for instance, the possibility to adapt the territorial scope of land and urban planning to environmental and sustainability issues; the decoupling between property itself and some of the uses it can be put to; the creation of a market of building rights; the efforts to regulate common goods, etc.

In fact, this non-spatial dimension of legal instruments reveals the complex, dynamic and relational face of reality. Goods, too, are the outcome of a set of interests governed by the law: for example, multi property, derivatives, administrative provisions[3].

In the light of these developments, the land acquires the characteristics that are traditionally associated only with the sea[4]. In this case, however, we are dealing with a multifaceted, dynamic and relational homogeneity – characteristic of the modern concepts of environment and ecosystem – which clashes both with natural and legal boundaries (categories and lists of goods[5], territorial scope)[6].

---

[1] L.H. Tribe, *American constitutional law*, New York, 1978, p. 15, where he states: "An incisive cartoon depicts a tall ship, perhaps the Mayflower, with two pilgrims leaning pensively over its side. As they scan the horizon, one says to the other: "*Religious freedom is my immediate goal, but my long-range plan is to go into real estate".* The remark nicely portrays a basic duality in constitutional history. For that history has embraced two dramatically different strands: the first concerned with intensely human and humane aspirations of personality …; the second concerned with vastly more mundane and mechanical matters like geography, territorial boundaries, and institutional arrangements".

[2] Cf. C. Schmitt, *Der Nomos der Erde im Völkerrecht des Jus Publicum Europeum*, Berlin, 1974.

[3] N. Lipari, *Le categorie del diritto civile*, Milan, Giuffrè, 2013, 122 ff.; P. Grossi, *I beni: itinerari tra "moderno" e "post-moderno"*, in Riv. Trim. dir. e proc. Civ., 2012, 1059 ff.; *L. Buffoni*, *La perequazione urbanistica e le "fonti" del diritto. lo sradicamento del nomos della terra*, in www.osservatoriosullefonti.it, no. 1/2011; in administrative law literature, L. Benvenuti, *Diritto e amministrazione. Itinerari di storia del pensiero*, Torino, 2011, 3; U. Vincenti, *Diritto senza identità. La crisi delle categorie giuridiche tradizionali*, Roma-Bari, 2007, 3, and esp. 23; regarding the *rapprochement* between the legal and economic concept of goods, G. Napolitano - A. Abrescia, *Analisi economica del diritto pubblico*, Bologna, 2009, 64-67 and also, from a different viewpoint, S. Moroni, *La Città responsabile*, *59-60;* A. Donati, *I diritti della terra, ovvero, il diritto ad un ambiente salubre nel quadro dell'economia globalizzata*, in Contratto e impresa, 2013, vol. 1 p. 256 ff.. For the definition of the administrative acts as legal goods, *ex multis*, Consiglio di Stato, section IV, decision 27 January 2012, no. 428.

[4] C. Schmitt, *Der Nomos der Erde*, cit., 20-21.

[5] In the proposal of the so-called "Rodotà Commission" (at http://www.astrid-online.it/Riforma-de2/Documenti/Commissione-Rodot-.pdf), land is only partially included among common goods; other laws

Soil transformation processes – salinization, compaction, acidification, erosion, soil sealing, pollution – are not containable within physical or legal boundaries; soil services – production of raw materials and food, stocking of CO2, combatting climate change, water harnessing , air filtering, biodiversity protection – cannot be isolated nor divided from one another[7]; the effects of human activity, of the way humans use the soil, go beyond the legal system and its rules[8].

Indeed, the very selection of the functions, the uses and the methods for exploiting the soil depends on factors which cannot be governed by law and require the resolution of new, global - albeit local - environmental problems[9] such as population increase, nutrition, migration and urbanization, energy supply, access to essential goods, sustainable development.

Consequently, a non-spatial law is required for land use management. In other words we need to find a new horizon for the land and its *nomos*. This paper seeks to assess certain theoretical-normative scenarios, based on land use management approaches experimented within and outside the EU.

---

define as a common good only agro-natural land (e.g., Lombardy Regional Law, 28 December 2011, no. 25); in literarture, the urban environment is described as a common good by M.R. Marella (edited by), *Oltre il pubblico e il privato. Per un diritto dei beni comuni*, Verona, Ombre corte, 2012, part III; M.A. Cabiddu, *Diritto del governo del territorio,* (edited by), 2010, 7.

[6] On the tendency to overcome physical and administrative city borders, L. Benvenuti, *Riflessioni in tema di città metropolitana*, lecture at the Seminar "*La razionalizzazione del sistema locale in Italia e in Europa*", held at the Scuola di specializzazione in studi sull'Amministrazione pubblica of the University of Bologna (SPISA) on 17 December 2012, published in Federalismi.it, 2013, no. 5, available at www.federalismi.it; on the value of complexity and relationality, E. Boscolo, *Le politiche idriche nella stagione della scarsità. La risorsa comune tra demanialità custodiale, pianificazioni e concessioni*, Milan, Giuffrè, 2012; M. Cafagno, *Principi e strumenti di tutela dell'ambiente come sistema complesso, adattativo, comune*, Torino, 2006; F. Fracchia, *Lo sviluppo sostenibile,* Napoli, 2010. On the consequences of environmental complexity on liability for damages to the environment, C. Castronovo, *Il danno all'ambiente nel sistema di responsabilità civile,* in "Rivista Critica di diritto privato", 1987, 512; Id., *La nuova responsabilità civile3,* Milan 2006, 737 ff.; C.D. Malagnino, *L'ambiente sistema complesso. Strumenti giuridici ed economici di tutela,* Padova 2007, 85 ff..

[7] Regarding the relationship between land and European Legislation, M. Renna, *Ambiente e territorio nell'ordinamento europeo*, Riv. It. Dir. pubbl. com., 2009, 649.

[8] See proceedings of the Conference *Planet under pressure*, 2012, available in streaming at http://www.planetunderpressure2012.net.

[9] On the short and long-term evaluation of these global phenomena, A. Sen, *Development and freedom, 1999*; A. Donati, *I diritti della terra*, cit., 256, underlining the danger that privatizations may downgrade common goods to market goods. With reference to the theory of C. Armstrong, *Global Distributive Justice*, Cambridge, 2012, P. I, Chapters 1 and 2.

2. Land and its "nomos": looking for models, categories and principles

As the variety and complexity of soil functions and the interdependence of ecosystems become increasingly apparent and generally accepted[10], also from a legal viewpoint, it becomes obvious that land uses can be managed - and regulated – only by moving away from the traditional concepts of goods and ownership.

In other words, managing land doesn't consist only in regulating (private and public) property rights nor in resolving conflicts between land owners.

From this standpoint, many legal and theoretical solutions are unsatisfactory: e.g. considering public property as an alternative to private property[11]; the theory of commons[12]; regulating land use by limiting property rights in the name of public interest[13].

The importance of a dynamic relationship between land and the environment and, hence, between land and those human beings who aspire to its broad and non discriminatory use, constitutes the starting block for the creation of a new regulatory model for land and land use management[14]. It is not a question of merely protecting, nor of safeguarding certain types of land uses, in line with cultural heritage or landscape protection legislation.

The so-called ecosystem services do not constitute natural land "products", as they cannot exist without involving human activity. On the contrary, human activity is sometimes

---

[10] At an international and European level, the soil's multiple functions are recognised by: *Millennium Ecosystem Assessment*, 2005; EU Commission**,** Proposal for a Directive of the European Parliament and of the Council establishing a framework for the protection of soil and amending Directive 2004/35/EC**,** COM(2006)232 final.

[11] In case law, reinterpreting the constitutional concept of public property, Cass. Civ., SS.UU., decision of 16 February 2011, no. 3811 (preceded by Cass, civ., ss.uu., 14 February 2011, no. 3665), see F. CORTESE, *Dalle valli da pesca ai beni comuni. La Cassazione rilegge lo statuto dei beni pubblici, in Giorn. dir. amm.*, 2011, 1170. For some critical views, N. Lipari, *Le categorie del diritto civile*, Milan, Giuffrè, 2013, 128 ff..

[12] The literature on common goods is extremely extensive: the debate on common goods is influenced by G. Hardin's The *Tragedy of the Commons*, in *Science*, 162, 1968, p. 1243 ff.; for a completely different perspective, see M.A. Heller, *The Tragedy of the Anticommons: Property in the transition from Marx to Market*, in *Harvard L. Rev.*, 111, 1998, p. 662 ff.; for a unifying view, see L.A. Fennell, *Common Interest Tragedies*, in *Northwestern Univ. Law Rev.*, 98, 2004, p. 907 ff.; on the contrary, with regard to the so-called *global commons* see E.A. Clancy, The *Tragedy of Global Commons*, in *Global Legal Studies J.*, 5, 1998, p. 601 ff.; in Italian literature, lastly, A. Ciervo, *Beni comuni,* Rome, 2012; M.R. Marella (edited by), *Oltre il pubblico e il privato. Per un diritto dei beni comuni*, cit.; A. Lucarelli, *La democrazia dei beni comuni*, Rome-Bari, Laterza, 2013.

[13] N. Lipari, *Le categorie del diritto civile*, Milan, Giuffrè, 2013, 128 ff.

[14] On the phenomenology of common goods, N. Lipari, *Le categorie*, cit. 128; U. Mattei, *Beni comuni. Un manifesto*, Rome-Bari, Laterza, 2011, 54 and 104, in which the author sheds light on the deep division between a machine/technology-oriented concept based on individualism and dominance and an ecological, holistic and community-oriented concept based on the quality of life.

indispensable: for instance, water absorption requires that certain agricultural practices be put into place; the production of wood and renewable energy sources is linked to forestry and associated industrial economic activities; Co2 absorption and filtering are enhanced by specific techniques used in agriculture and forestry. These functions could also be ensured in other ways – thanks to different energy sources or new ways of stocking Co2 or air filtering – while the development of technology constantly increases the options available to decision makers (both in the public and the private sector).

The notion of ecosystem services, moreover, does not include the entirety of soil functions which increase considerably once they are linked to human uses and, consequently, to fundamental goods such as life, food, essential resources and services, housing, health and environment, transportation, energy.

Hence the need for new policies and land use management approaches that go beyond the narrow scope of protecting the intrinsic characteristics of soil and its ecosystem services.

It is therefore necessary to start with a few but extremely significant legal principles.

The first principle is that of sustainable development. Although this principle was initially solely applied to environmental concerns, its scope grew considerably at an international and national level and became all-encompassing. Consequently it has now become a parameter for assessing the impact of human activity and can be applied to all public policies liable to endanger the existence, development and freedom of choice of future generations, also as regards the management of essential resources.

The sustainability principle affects certain fundamental aspects of land management policies: in particular, these policies are now considered necessary and indispensable in themselves, without the need for a direct reference to individual/human rights or the establishment of additional land rights[15]. To this extent, the relationship between land management and certain human or fundamental rights conditions the communities and public policies involved, highlighting their interdependence.

[15] On the meaning of the list of essential capabilities in M. Nussbaum's theory and differences with the views of A. Sen, J.M. Alexander, *Capabilities, Human Rights and Moral Pluralism*, in The Int. J. of HR, Volume 8/3 (2004), available at http://www-3.unipv.it/deontica/sen/papers/Alexander.pdf; cf. also B. Celano, *I diritti nello Stato costituzionale*, Bologna, Mulino, 2013, on the *choice theory*, p. 59: the power to renounce certain rights (both by representatives and public authorities) should be excluded.

Secondly, the sustainability principle requires that land and land use management be made sustainable itself. Thus, it is not enough to limit urbanization processes (which the expression "*land consumption*" refers to[16]): urbanization processes must be made sustainable (new construction techniques, new materials, new energy sources[17], a new transport system, different lifestyles, different solutions depending on population density, more rational ways of soil exploitation).

Sustainable public policies are all characterized by the same features: complexity, multiple potential solutions[18], a dynamic approach and uncertainty[19]. Although – as we will show further on – land management models share certain principles with risk management legislation and policies (precautionary approach[20], elimination of the risk at its source, importance of state-of-the-art scientific knowledge, prevention), insofar as these principles

[16] S. Moroni, *La città responsabile. Rinnovamento istituzionale e rinascita civica*, Rome 2013, 53 ff. and footnotes. Cf. also EU Commission, Proposal for a Directive of the European Parliament and of the Council establishing a framework for the protection of soil and amending Directive 2004/35/EC**,** COM(2006)232 final, Article 1.

[17] See Article 13, paragraph 3, of Directive 2009/28/CE which states: "Member States shall recommend to all actors, in particular local and regional administrative bodies, to ensure equipment and systems are installed for the use of electricity, heating and cooling from renewable energy sources and for district heating and cooling when planning, designing, building and renovating industrial or residential areas. Member States shall, in particular, encourage local and regional administrative bodies to include heating and cooling from renewable energy sources in the planning of city infrastructure, where appropriate." In conformity with this provision, the French Loi Grenelle II (2010) has contributed to redesigning land management in France.

[18] The reduction of Co2 emissions can be achieved either by increasing the stock of undeveloped land or by increasing the soil's capacity to stock Co2, or even by financing/providing incentives to reduce the emissions quota. The European Commission, for instance, presented, in November 2008, a plan against the economic crisis which provides, among others: quicker granting of EU funding and promotion of investments in clean technologies; an increase, on behalf of the ECB, of 5-10 billion per year for financial investments in industries committed to CO2 reduction, energy security and infrastructures; incentives for "clean" cars, ecological houses and the restructuring of buildings with the aim of reducing pollution and energy consumption; reduction of VAT in order to encourage consumption and to promote energy saving products. On EU funding policies in the environmental sector, P. Falletta, *La "permeabilità" e l'integrazione del valore ambiente nell'ambito delle politiche di sviluppo,* in www.amministrazioneincammino.it; in general, on how to protect of the environment through market tools, M. Clarich, *La tutela dell'ambiente attraverso il mercato,* in *Analisi economica e diritto pubblico,* Annuario AIPDA 2006, Milan, 2007, 106. On the moral limitations of this approach, M. J. Sandel, *What money can't buy. The moral limits of markets*, New York, 2012.

[19] Scientific and technological innovation can bring about changes in public policies: a significant example of this is, as we shall see, the EU policy on sustainable energy sources, which was revised during its implementation following the discovery of the harmful effects of biomass production on soil and soil functions.

[20] Cf. Art. 191, TFEU; Comunication from the Commission, 2 February 2000, on the precautionary principle COM (2000) 1 final. The aim of this principle is to guarantee a high level of environmental protection thanks to precautionary policies in risky situations. However, in practice, the scope of application of this principle is much wider and also extends to consumer policy, the European legislation on food as well as human, animal and plant health. For an analysis of the effects of the precautionary approach to the balance between the environment and the market, M. Mazzamuto, *Diritto dell'ambiente e sistema comunitario delle libertà economiche*, in Riv. It. Dir. pubbl. com., 2009, 1576 ff.; for an in-depth analysis of electromagnetic pollution, T. Fortuna, *Inquinamento elettromagnetico vs. diritto alla salute: il rimedio nell'approccio precauzionale*, in Federalismi, 5 February 2014.

are also present in national and international environmental law, the principle of sustainable development goes far beyond.

Sustainability modifies, in effect, the factual and spatial-temporal parameters of public policies: it changes the legal, factual and cognitive ground of administrative decisions[21], brings forth new issues regarding their efficacy and effectiveness, highlights the need to rethink traditional criteria for the attribution of areas of competence among different layers of government. For instance, what would be an acceptable time span for evaluating the sustainability of spatial and urban plans? And on what would such an evaluation be based? Would this evaluation impact on the term of validity of urban plans or their territorial scope? How would it be possible to ensure a sustainable (and self adaptive) stability of any regulation impacting on land functions and uses?

The second principle, which is closely linked to that of sustainable development, is the integration principle, originally implemented by the EU for the protection of the environment[22] and currently extended to other fields and public interests (cfr. art. 9-13, Treaty on the Functioning of the European Union). As we know, the integration principle goes beyond the boundaries of traditional mechanisms for coordinating public policies and balancing sectoral public interests. In fact, this principle shapes each sectoral policy in accordance with specific values and interests (art. 7 TFEU[23]). We should, however, note that the extension of the integration principle to other values or interests - employment, social benefits, education, training, health, animal protection, consumer protection -, increases the potential for conflicting public decisions, particularly when taking into account – in the present case – the relational aspects of soil and the variety of functions it is able to perform (on this point, *amplius*, par. 3).

Indeed, even though the safeguarding and management of the soil, its uses and functions fall under the application scope of the integration principle, it must be said that this principle does not cover exhaustively all the dimensions of the resource soil (not all the problems pertaining to soil transformation are environmental problems) and consequently

[21] Cf., for example, F. De Leonardis, *Le trasformazioni della legalità nel diritto ambientale*, in G. Rossi, *Diritto dell'ambiente*, Torino, 2008, 125. On the inability of economic analysis to provide specific answers, A. Sen, *Globalizzazione e libertà*, Milan 2002, [original ed. *Freedom and Globalization]*, 98.

[22] P. Falletta, *La "permeabilità" e l'integrazione del valore ambiente nell'ambito delle politiche di sviluppo,* in Amminstrazione in cammino, 2010, no. 4, available at http://amministrazioneincammino.luiss.it/wp-content/uploads/2010/04/saggio_001.pdf..

[23] Art. 7 states: "*The Union shall ensure consistency between its policies and activities, taking all of its objectives into account and in accordance with the principle of conferral of powers*".

the multiple uses and functions of soil are not wholly taken into account in decision making.

Last but not least, we have to mention the proportionality principle. Even though land management policies and decisions fall under the scope of the proportionality principle, emphasis must be placed on how this principle affects the legitimacy of regulations concerning land rights, land functions and uses (obligations, limits, indexes, thresholds to be respected by land owners and users)[24].

3. Soil transformation and human development: which public policies?

On an everyday basis, the topics discussed in this paper are often summed up with the term "land consumption" or "land take". However, this term does not express and cover all issues and challenges linked to land (and land use) management.

As it has been observed, it is true that land cannot be consumed[25] and that what we need to address are land uses and consequently, all topsoil transformations depending on different land uses. The concept is, therefore, very broad and does not only regard urbanization processes but all development processes that have an impact on the soil, its features and its functions.

Urbanization processes attract more attention because they are linked to "land take" and, to soil sealing, one of the most significant causes of soil degradation[26]. In other

[24] M. Mazzamuto, *Diritto dell'ambiente e sistema comunitario delle libertà economiche*, in Riv. It. Dir. pubbl. com., 2009, 1597-1598. See, also G. Morbidelli, *Profili giurisdizionali e giustiziali nella tutela amministrativa dell'ambiente*, in S. Grassi – M. Cecchetti – A. Andronio, *Ambiente e diritto*, II, Città di Castello, 1999, 311 ff.

On the principle of proportionality, D.U. Galetta, *Il principio di proporzionalità*, in M. Renna – F. Saitta, *Studi sui principi del diritto amministrativo*, Milan, Giuffrè, 2012, 389 ff.; G. Ligugnana, *Principio di proporzionalità e integrazione tra ordinamenti. Il caso inglese e italiano*, in Riv. It. Dir. pubbl. com. 2011, 447, ff..

As regards the construction of a legal model for soil management, *New Institutional Economics* studies provide a fundamental contribution. For an in-depth analysis, E. Ostrom, *Private and common property rights*, 2000, available at https://library.conservation.org/Published%20Documents/2009/2000%20Ostrom.%20Private%20and%20Common%20Property%20Rights%20book.pdf; A. L. Fennell, *Ostrom's Law: Property Rights in the Commons*, in Int. J. Of the commons, 2011, no. 1, available at http://www.thecommonsjournal.org/index.php/ijc/article/view/252/182.

[25] Good practices take account of the fundamental issue that soil formation is an extremely slow process. Indeed, once it is sealed, the soil's functions are lost, entirely or in great part (Siebielec, 2010). On the renewable nature of soil, S. Moroni, *La città responsabile. Rinnovamento istituzionale e rinascita civica, cit.*.

[26] The importance of soil sealing in soil protection policies is confirmed by many EU documents: for a complete analysis see par. 4 and relevant footnotes. Among other documents, see Guidelines on best

words, they are held responsible for the quantitative, substantial and functional deterioration of the soil affecting biodiversity as well as the fundamental ecosystem services that the soil provides: food production, water absorption, air filtering and soil buffering, production of essential raw materials. On the other hand, it has to be taken under consideration that urbanization processes are linked to equally fundamental uses (homes, schools, hospitals, infrastructures), whose perception is overshadowed by speculative interests often hidden behind development operations[27].

Land regulation and management, therefore, do not consist merely in a series of measures aimed at protecting certain original features of soil (soil transformation is a natural process), nor at limiting property rights so as to enable some specific uses. They consists, primarily, in selecting and regulating the soil's uses and functions, while bearing in mind that soil functions (i.e. ecosystem services) depend on its uses and vice versa.

The real problem, at this point, is how to adapt public policies to this new perspective with a view to defining the legal grounds[28] of public decisions concerning the selection and regulation of land uses.

Some statistics could be useful here.

A recent United Nations report estimates that the world's population will rise to 9 billion by the year 2050 (which is equal to 78,1% of the increase between 1950 to 2050): 1 million more people every week for the next 37 years. Urban centres will be mostly affected by population growth which will impact on their expansion: due to migration flows

---

practice to limit, mitigate and compensate soil sealing, EC Staff Working Document for information purposes SWD(2012) 101, available at http://ec.europa.eu/environment/soil/sealing_guidelines.htm] See also *Urban Soil Management Strategy (URBAN SMS), Part 1, (Project No. 6.56),WP 6: Environmental impact of urban soil consumption*, 21 February 2011, available at http://www.urban-sms.eu/fileadmin/inhalte/urbansms/pdf_files/final_results/22_Environmental_impact_of_urban_soil_consumption.pdf; report "Cities of Tomorrow: Challenges, Visions, Ways Forward" (DG REGIO, 2011), available at http://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/citiesoftomorrow/citiesoftomorrow_summary_it.pdf.

[27] A. Roccella, Lecture given at the "Seminario internacional de derecho comparado: crisis economica, semplificación administrativa y sustenibilidad urbana", *Il sistema della gestione territoriale sostenibile: articolazione e coordinamento dei diversi strumenti di pianificazione economica, territoriale e sociale*, Milan, 12 February 2014*;* Cf. also L. Casini, *L'equilibrio degli interessi nel governo del territorio*, Milan, 2005.

[28] Cf. ECJ, IV, 4 March 2010, *Commission v Italy,* C- 297/08, point 105 which states "waste is matter of a special kind, with the result that accumulation of waste, even before it becomes a health hazard, constitutes a danger to the environment". For comments, C. Feliziani, *The duty of Member States to guarantee the Right to a Healthy Environment: a consideration of European Commission v Italy (C- 297-08), in the Journal of Environmental Law 24 3 (2012)*, 535-546; ID., *Il diritto fondamentale all'ambiente salubre*, cit., 1009, recalling that the aim of Directive 2006/12/EC is to protect not only the environment but also public health (citations and recitals).

towards urban centres, 6.3 billion people (up from 3.5 billion today) will move to the cities by 2050. The process will affect small and medium sized cities rather than large ones[29].

Europe is currently the continent with the highest urbanization rate and, as such, has a leading role in this process. Suffice it to say, as demonstrated in recent studies published by the European Commission, that urbanized areas increased by 1000 km^2 per year in the 1990-2000 period, equal to 6% of the total surface area (275 hectares per day, equal to the size of the city of Berlin). Although the urbanization rate decreased to 920 km^2 during the 2000-2006 period (corresponding to a further 3% increase of the total surface area), it must be noted that urbanized areas grew by almost 9% between 1990 and 2006 (from 176200 to 191200 km2[30]). In other words, if this upward trend is confirmed, within the historically short period of 100 years, an amount of land as large as the territory of Hungary would be converted [31].

Approximately 75% of Europe's population currently resides in urban areas. This figure is expected to rise to 80% by 2020[32] and may exceed 90% in seven Member States. Today, the size of European areas classified as peri-urban is the same as that of built-up areas. However, only half of them show the same population density[33].

It is important to note that, during the same period, the population increased by only 5% (a paradox of the so-called "decoupled land consumption"), although there are significant differences between European countries and within regions.

---

[29] Assesses demographic growth as an environmental issue, A. Sen, *Libertà e globalizzazione*, cit., 98 and 100. The author observes that the impact of population growth does not depend so much on the rate of growth but on life styles: this happens in the short term; on the contrary, in the long term, net growth at world level is a problem particularly when it is associated with a change in life styles.

For statistics, see Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, *The implementation of the Soil Thematic Strategy and ongoing activities*, Brussels, 13.2.2012 COM(2012) 46 final, available at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0046:FIN:IT; EU Commission, *Science for environmental policies, Thematic Issue: Brownfields regeneration*, May 2013, available at http://ec.europa.eu/environment/integration/research/newsalert/pdf/39si.pdf

[30] By 78% from 1950 to today, compared to a population increase of just 33%. (data, EEA, 2006).

[31] European Commission working document, Guidelines on best practice to limit, mitigate or compensate soil sealing, SWD(2012) 101 final/2, cit., p. 7, and, in particular, Annex 2, p. 42. The data is provided by the European Environment Agency–EEA, based on the land use map *Corine Land Cover 3* for the years 1990, 2000 and 2006. On the inadequacy of this data for contrasting the phenomenon of soil consumption at certain institutional levels, B. Romano and F. Zullo, *Models of land use in Europe. Assessment tools and criticalities*, in I.J. A.E. I.S., 2013, available at http://www.planeco.org/InternationalPapers/Text_submitted.pdf.

[32] See EEA, The Environment in Europe – Current state and perspectives 2010: urban environment, Copenhagen

[33] A. Piorr – J. Ravetz – I. Tosics I, *Peri-urbanisation in Europe: Towards a European Policy to sustain Urban-Rural Futures*. University of Copenhagen, available at http://www.plurel.net/images/Peri_Urbanisation_in_ Europe_printversion.pdf .

This estimated population growth represents a major sustainability challenge for cities as they have to balance the excessive use of resources and the need to improve the living standards of people in suburban areas (870 million people globally). We should also bear in mind that cities are currently responsible for over 70% of CO_2 emissions.

Demographic fluctuations, however, are not the only cause of land urbanization, nor is land urbanization only caused by demographic fluctuations. Other factors - such as (improved) lifestyles, industrial and economic development, fiscal policies[34], environmental policies, low densification urban policies, social and housing policies - affect land urbanization. These factors (many of them legal) lead to a demand for better housing (at a lower price) with more living space[35]; a demand for green areas and a more family-friendly context. As we have already discussed, thanks to the so-called *decoupled land consumption*, urban sprawl and "land consumption" takes place even in the absence of - or not proportionally to - demographic growth.

As regards the effects of population growth, besides a greater demand for living space, there is a greater demand for food (hence more land for agriculture, breeding and grazing and intensive farming techniques involving extensive use of pesticides[36]), for consumption goods and energy sources (hence more forests for wood production, land for biofuel crops), industries and infrastructures (hence more land for building sites), increased waste production (hence more land for waste treatment sites and landfills) and pollutants (hence a greater demand for land able to offset the greenhouse effect[37], to

[34] "Une part essentielle du véritable pouvoir d'urbanisme, au niveau de l'État, se trouve à Bercy, peut-être plus qu'au ministère officiellement en charge", states C. Denizeau, *Grenelle II : a fin de l'étalement urbain?*, available at http://www.metropolitiques.eu/Grenelle-II-la-fin-de-l-etalement.html; cf. also S. Moroni, *La città responsabile. Rinnovamento istituzionale e rinascita civica*, cit..

[35] There is still a large difference in the average living area per person between cities in the EU-15 and cities in the EU-12: 15 m2 per person is average in Romanian cities, compared to 36 m2 per person in Italian cities and 40 m2 in German cities (DG REGIO, 2011).

[36] For the impact of fertilizers on agriculture, apart from the EU documents related to CAP 2014, see proceedings of the Conference *Planet under pressure*, 2012, cit..

[37] The United Nations Framework Convention on Climate Change (UNFCCC) recognizes that global warming should not exceed by more than 2°C the temperatures registered before the industrial revolution. By 2050, all industrialized countries should reduce their emissions by 80 to 95% compared to 1990 levels. In the medium term, by 2020, the EU has committed itself to reducing its greenhouse gas emissions by 20% compared to 1990 levels (by 30% if conditions are favourable). The sectors of land use, land use change and forestry (LULUCF) are not included in this commitment. For 2020, the EU has committed to cutting its emissions to 20% below 1990 levels. This commitment is one of the headline targets of the Europe 2020 growth strategy and is being implemented through a package of binding legislation. The EU has offered to increase its emissions reduction to 30% by 2020 if other major emitting countries in the developed and developing worlds commit to undertake their fair share of a global emissions reduction effort.

In the climate and energy policy framework for 2030, the European Commission proposes that the EU set itself a target of reducing emissions to 40% below 1990 levels by 2030.

prevent erosion, suitable for farming and food production …), for services and, consequently, for public spaces.

Furthermore, population increase leads to phenomena such as the suburbanization and depopulation of certain urban areas due to demographic changes and ageing, making it necessary to implement policies regarding migration flows, healthcare and housing[38].

These processes obviously do not affect all territories and all legal systems equally but they all involve potentially conflicting and certainly interdependent decisions on land use.

In this context it is evident that the responses to development processes, also in terms of managing the impact these transformations have on land, cannot be provided solely by environmental or land management policies, as they fall within a wide scope of public policies[39] and concern many interests and primary goods.

Moreover, the global dimension of the processes impacting on land, land functions and uses - as well as the transnational or postnational nature of policies related to them - is brought to light[40].

For 2050, EU leaders have endorsed the objective of reducing Europe's greenhouse gas emissions by 80-95% compared to 1990 levels as part of efforts by developed countries as a group to reduce their emissions by a similar degree. The European Commission has published a roadmap for building the implied low-carbon European economy .

[38] Incentives aimed at renting uninhabited houses could help to limit soil sealing and, at the same time, reduce the pressure on European regions who would otherwise be obliged to occupy the land, something that would be both useless and harmful. As we know, in order to allow the recovery of the so-called *blighted areas* for living purposes, some US administrations had ample recourse to *eminent domain power*. Despite the approval of the Supreme Court, since the judgement in *Kelo v. City of New London* (2005), many States and even the Federal State (with the 1996 Bush Order) took steps to restrict the scope of application of eminent domain.

[39] In October 2012 Jean Ziegler, the UN Special Rapporteur on the Right to Food, described as a "crime against humanity" the situation where despite "the enormous number of people suffering daily from hunger" there are incentives for growing "oil palm, soy or sugar cane to feed cars". The data related to direct and indirect land-use changes contained in the Brazilian energy security plan are extremely interesting (D. Lapola et al., *Indirect land-use changes can overcome carbon savings from biofuels in Brazil*, 2010, available at http://www.pnas.org/content/107/8/3388.full.pdf+html): the study shows how the growing of certain plants and the use of specific energy sources (oil palm and sugar cane), would considerably reduce the effects in terms of both direct and indirect land use. To comply with the levels of biodiesel fixed for 2020, an area of 4.200 km^2 would have to be cultivated with oil palm whereas, in the case of soy, the area would reach 108.100 km^2. Because of the negative impact in terms of direct and indirect land use change, the EU has recently revised its objectives with regard to biofuel production (Dir. 2009/28/CE biofuels, problems, energy from waste).

[40] M. Mazzamuto, *Diritto dell'ambiente e sistema comunitario delle libertà economiche*, in Riv. It. Dir. pubbl. com., 2009, 1598 where the author concludes: "*it is only at the highest levels that the delicate balance between top quality goods can find its natural position, reducing the other decision-making centres to a marginal role*"(translation from the Italian text); A. Donati, *I diritti della terra*, cit., 258, according to whom "the globalized dimension of this phenomenon (market globalization and privatization of common goods) goes

What mainly interests us now is not to determine the optimal – and by definition dynamic - point of equilibrium of these transformations but to examine how the law can guide decision-making towards a better land and land use management.

Although the move from postnational policies to postnational law is not immediate, it is also true that national law – and even EU law – is increasingly able to adapt itself to the new dimension of public policies and the balances and compromises they imply[41].

4. Land use regulations under the EU perspective

The issues of land protection and management have long been included in the EU Agenda. In particular, the Sixth Environment Action Programme[42] already proposed seven thematic strategies not limited to single pollutants or economic activities but aimed at providing answers to complex issues by promoting synergies between sectoral policies and in view of achieving the objectives of the Lisbon strategy.

Apart from the strategy specifically regarding soil protection[43], we are also interested in strategies for the efficient use of resources[44], regarding the urban environment[45] and the

---

beyond the legal solutions that have been, or could be, adopted at national level, and also beyond (…), those that could be achievable by means of international conventions" (translation from the Italian text).

[41] The adjustment would be mostly substantive rather than formal/procedural. For an in-depth presentation of these phenomena, N. Krisch, *Beyond Constitutionalism*, Oxford, Oxford University Press, 2010, espec. 5 ff.; L. Torchia, *Il governo delle differenze*, Bologna, 2006; in economic literature see, particularly, the contribution of O. E. Williamson to the definition of transaction cost economics and its application to the governance of complex organizations: in particular, among others, *The Mechanisms of Governance*, Oxford University Press, New York, 1996, and *Transaction cost Economics: an introduction*, in Economics discussion papers, 2007, no. 3, available at www.economics-ejournal.org.

[42] Communication from the Commission to the Council, The European Parliament, the European Economic and Social Committee and the Committee of the Regions, 22 September 2006, COM(2006)231 final, *Thematic Strategy for Soil Protection* [SEC(2006)620] [SEC(2006)1165].

[43] Communication from the Commission to the Council, The European Parliament, the European Economic and Social Committee and the Committee of the Regions, 24 January 2001, on the sixth environment action programme of the European Community *'Environment 2010: Our future, Our choice*' [COM(2001) 31 final – Not published in the Official Journal].

[44] EU Commission, Comunication 21 December 2005 "*Thematic Strategy on the sustainable use of natural resources"*, COM(2005) 670. The strategy aims at reducing environmental pressure in every phase of the resources' life-cycle, including extracting, harvesting, use and disposal. It is, therefore, a matter of integrating the concepts of life-cycle and impact of resources in the policies associated with them. This approach, which in future will be systematically applied to all environmental policies, is already an integral part of certain initiatives such as the thematic strategy on waste. Certain actions, such as the Integrated Product Policy or the Environmental Technology Action Programme, are complemetary to this approach.

[45] Communication from the Commission to the Council and the European Parliament on a "*Thematic Strategy on the Urban Environment*" [COM/2005/0718 final - Not published in the EU Official Journal] publication of guidelines for the integration of environmental issues in urban policies. These guidelines will be based on best practices and expert opinions. An integrated environmental management will result in better programming and avoiding conflict between the various measures; publication of guidelines regarding

sustainable use of pesticides[46]. All these strategies clearly illustrate, on one hand, that public policies are deeply interdependent and, on the other, that they lack efficiency as a result of a too rigid segmentation of areas of competence.

The strategy aimed at soil protection is deeply rooted in EU law as it is based both on environmental provisions (art. 175, par. 1 TCE), and on the principle of subsidiarity. From a substantive viewpoint, the strategy highlights the need for action as regards both the causes of urbanization and the selection of land uses at all levels of government.

The proposal contained in the Framework Directive[47], which did not obtain the majority required under the co-decision procedure[48], provided for an heterogeneous series of measures aimed at preventing and remedying degradation of the soil and the services it provides.

Special provision was made – by means of a general principle [49] - for the prevention and remedying of *soil sealing*[50]. This phenomenon - considered one of the main causes of

---

sustainable urban transport. These guidelines, as well, will be based on best practices and expert opinions. An efficient urban transport plan should take account of people and goods and promote the safe and effective use of high quality and non-polluting means of transport; Decision of the European Parliament and of the Council, 27 June 2001, *Community Framework for cooperation to promote sustainable urban development*, 1411/2001/EU.

[46] Communication from the Commission to the Council, the European Parliament and the Economic and Social Committee , 1 July 2002, *Towards a Thematic Strategy on the Sustainable Use of Pesticides,* COM(2002)349 final - Not published in the EU Official Journal].

[47] EU Commission, Proposal for a Directive of the European Parliament and of the Council establishing a framework for the protection of soil and amending Directive 2004/35/EC/, COM(2006)232 final.

In literature, for an in-depth analysis, A. Fioritto, item *Agricoltura*, in M.P. Chiti – G. Greco, *Trattato di diritto amministrativo europeo*, General Section, Volume I, 497, Milan, Giuffrè, p. 25 ff.; G. Cocco – A. Marzanati – R. Pupilella, item *Ambiente. Il sistema organizzativo ed i principi fondamentali,* in M.P. Chiti – G. Greco, *Trattato di diritto amministrativo europeo*, Sectoral Section, Volume I, Milan, Giuffrè, p. 157 ff.; A. Grasso –A. Marzanati- A. Russo, *Ambiente. Articolazioni di settore e normativa di riferimento*, in M.P. Chiti – G. Greco, *Trattato di diritto amministrativo europeo*, Sectoral Section, Volume I, Milan, Giuffrè, 273 ff..

European Commission Document, *Guidelines on best practice to limit, mitigate or compensate soil sealing*, SWD(2012) 101 final/2, available at http://ec.europa.eu/environment/soil/sealing_guidelines.htm, 2012; European Union, ERDF, Document Urban SMS, WP3, Action 2, Task 1

Existing soil management approaches within urban planning procedures - Transnational Synthesis, April 2010, available at http://www.central2013.eu/fileadmin/user_upload/Downloads/outputlib/UrbanSMS_Soil_management_approaches_uploaded.pdf.

See also B. Romano, F. Zullo, *Models of Urban Land Use in Europe, Assessment tools and criticalities,* in *International Journal of Agricultural and Environmental Information Systems*, (IJAEIS), July 2013, available at http://www.planeco.org/InternationalPapers/Text_submitted.pdf.

[48] Some States have decided that competence in this field is strictly national and that, therefore, the Directive does not comply with the principle of subsidiarity.

[49] Cf. art. 5 of the Directive proposal.

[50] It was also acknowledged that land use, i.e. the expansion of cities and infrastructures to the detriment of agriculture, forestry and natural resources, is usually correlated with soil sealing (with some exceptions such as, for example, certain mining activities). Therefore, even though the present document focuses specifically on soil sealing, it also addresses the issue of land use. Its aim is to highlight the need for

degradation of the soil and the services it provides – mainly depends on urbanization and, subsequently, on spatial and urban policies. As we will see further on, the most recent studies on land safeguarding and management underline the need to combine actions aimed at soil protection with those regarding urban development, while emphasizing the need to move from mere soil protection to soil management[51].

The soil protection strategy contained specific and detailed provisions regarding single risk factors such as erosion, landslides, decrease of organic material in the soil, salinisation and compaction: Member States were requested to map areas at risk and adopt active measures aimed both at preventing and combating these phenomena. In the case of soil pollution, the mapping of polluted sites was required – following time limits fixed by the EU[52] – and this constituted a starting point for implementing national strategies for the reclamation of polluted sites[53].

As regards the principles involved, in addition to those linked to risk prevention, mitigation and protection common to EU legislation on risk management and dangerous activities, the Directive proposal called upon principles pertaining to environmental law and especially: the need to integrate soil protection in all public decisions impacting on soil and soil services; the need for an impact assessment evaluation; the establishment of a duty to inform and, as regards public entities, to exchange information and to involve the public. Therefore, for precautionary purposes, Member States were obliged to require land users, whose activities could reasonably be expected to cause soil degradation, to respect preventive or risk mitigation measures.

---

an effective and sustainable use of land resources, taking account of the demographic and regional situation as well as of the high potential of urban reconstruction.

[51] Cf. Communication from the Commission to the Council and the European Parliament on a "*Thematic Strategy on the Urban Environment*" [COM/2005/0718 final] which states: "Given the cross-cutting nature of urban management, any strategy aimed at improving the urban environment must be coordinated with other relevant environmental policies such as policies to combat climate change (energy-efficient buildings, urban transport plans, etc.), to protect biodiversity (reduction of urban sprawl, rehabilitation of abandoned industrial sites, etc.), to protect health and quality of life (air quality, noise, etc), to promote the sustainable use of natural resources as well as the prevention and recycling of waste.

[52] Also involving private subjects, by requiring a report on the state of the soil when a potentially polluted site is to be sold (as defined in Annex I of the Directive proposal).

[53] Cf. for an in-depth analysis on mapping systems used in some European countries (in particular, Germany), see W. Lexer,S. Huber,A. Kurzweil, *Urban Soil Management Strategy, Existing soil management approaches within urban planning procedures - Transnational Synthesis*, April 2010, funded by Central Europe ERDF, available at http://www.central2013.eu/fileadmin/user_upload/Downloads/outputlib/UrbanSMS_Soil_management_approaches_uploaded.pdf.

Although some of the proposed actions (which, in fact, were the object of some criticism) were taken up, at least partially, by subsequent legislative provisions[54], the lack of a common EU strategy still constitutes a major shortcoming and results in significant economic and environmental losses.

If it is true that the common strategy is filtered down through many of the sectoral policies[55] - for instance, throughEU legislation on the reclamation of polluted sites, impact assessment, water[56], waste[57], chemical substances[58], industrial pollution prevention[59], protection of nature and pesticides[60], combatting climate change[61], energy[62], transports[63], the new common agricultural policy[64], and the policy for rural development[65] - it is also true that this results in fragmented and incomplete soil protection measures.

---

[54] See, as regards Italy, Article 36-bis D.L. no. 83/2012, referring to, among others, Article 252 of d.lgs. 152/2006. To implement the above mentioned provisions a Ministerial Decree was issued on 11 January 2013 indicating 18 sites of national interest (compared to the 57 existing before) which were placed under regional competence, as they did not fulfill the requirements of D.L. 83/2012. Moreover, under the present legislature a special provision was introduced aimed at allowing the use of excavation matrerial from abandoned or exhausted land, situated in sites of national interest, in order to undertake activities of filling, replentishing, remodelling, creating embankments, improving land or roads, as well as other forms of environmental upgrading (art. 41, comma 3-bis, D.L. 69/2013; and more recently art. 8 of D.L. n. 133/2014, conv. con mod. in L. n. 164/2014). It must be noted that Article 2 of Directive 2008/98/EC, with regard to the definition of waste, excludes non contaminated soil from its scope.

[55] See Art. 3 of the proposal for a Framework Directive. The proposed Directive also provided for: a) support for research in certain sectors of soil protection; b) a public awareness-raising programme. In compliance with the obligations under the Århus Convention, in view of elaborating, modifying and revising measures regarding areas at risk and national land reclamation strategies, it is appropriate to apply Directive 2003/35/EC of the European Parliament and of the Council, of 26 May 2003, providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment and amending with regard to public participation and access to justice Council Directives 85/337/EEC and 96/61/EC.

[56] See, apart from Directive 2000/60/EC, Directive 2007/60/EC, regarding floods, implemented in Italy with D.Lgs. no. 49/2010.

[57] See Directive 2008/98/ EC on waste.

[58] See Directive 2009/28/ EC on the use of energy from renewable sources.

[59] See Directive 2010/75/EU.

[60] Directive 2009/128/EU of the European Parliament and of the Council, of 21 October 2009, establishing a framework for Community action to achieve the sustainable use of pesticides.

[61] Acknowledges the role of soil in the fight against climate change: EU Commission, White paper '*Adapting to climate change: towards a European framework for action'*, 1 April 2009, COM(2009) 147 final. This role is also confirmed by the subsequent European actions in the LULUCF sector, as defined in paragraphs 3.3. and 3.4 of the Kyoto Protocol. As last, Regulation (EU) no. 525/2013 of the European Parliament and of the Council, of 21 May 2013, *on a mechanism for monitoring and reporting greenhouse gas emissions and for reporting other information at national and Union level relevant to climate change and repealing Decision No 280/2004/EC.*

[62] Cf. Directive 2009/28/CE on renewable energy.

[63] For an overall picture, COM(2009) 490, available at http://ec.europa.eu/transport/themes/urban/urban_mobility/doc/com_2009_490_5_action_plan_on_urban_mobility.pdf.

[64] Cf. Regulations (EU) no.1306, 1307, 1308, 1309, 1310, 1311 of 2013. As regards the forestry policy, EU Commission, *Communication from the Commission to the Council and the European Parliament on an EU Forest Action Plan.* COM(2006) 302 final.

[65] Cf. Regulation (EC) no. 1698/2005.

These measures do not take account of all types of soil, nor of all the potential risk factors that threaten to disrupt its services: for this reason it is difficult to measure and assess the benefits deriving from the various policies. For example, the cross-compliance system and the common agriculture policy can give excellent results in terms of improvement of soil quality, but this system lacks provisions for combatting soil sealing or salinisation, not to mention that cross-compliance is, in any case, only applied to land receiving EU funding. Moreover, even if data regarding the impact of the CAP on the protection of the soil's organic matter can be considered satisfactory and trustworthy, this is not the case when we attempt to measure the impact of this policy on the entirety of the soil's functions[66].

Indeed, given the extremely wide spectrum of functions, quite often the same policy is contradictory: always with regard to the CAP, consider the opposite effects – in terms of maintaining the level of organic matter – of the cross-compliance policy and the abolition of the set-aside land policy introduced in 1988[67]. Consider also the impact of the EU energy policy on biofuels which is responsible not only for the conversion of agricultural land to non-food uses and for land grabbing in the poorer areas of the planet, but also for producing significant CO2 emissions and menacing biodiversity. Other examples are the cohesion policies and their impact on infrastructure development and, hence, on soil sealing[68] as well as indirect change of land use resulting from green energy policy (e.g. photovoltaic panels) [69].

[66] For a more detailed explanation, Joint Research Center (JRC) Report, *State of Soil in Europe - A contribution of the JRC to the European Environment Agency's Environment State and Outlook Report – SOER 2010, 2012, Report* EUR 25186 EN, available at ec.europa.eu/dgs/jrc/downloads/jrc_reference_report_2012_02_soil.pdf, p. 50 and relevant bibliography.

[67] Cf. Regulation EEC no. 1272/1988.

[68] The Cohesion Policy 2007-2013, based on Regulation (EC) no. 1080/2006 of the European Parliament and of the Council, of 5 July 2006, on the European Regional Development Fund and repealing Regulation (EC) No 1783/1999, has funded, through the ERDF, infrastructures closely linked to research and innovation, telecommunications, environment, energy and transport. Although Article 8 of the ERDF Regulation encourages sustainable urban development through the redevelopment of brownfields and old city centres, it is also a fact that this policy is co-responsible for the soil sealing phenomenon which often also involves green areas.

[69] Directive 2009/28 on the promotion of the use of energy from renewable sources**.** The implementation of this Directive was halted following a vote by the Environment Committee of the European Parliament against the start of negotiations with the European Council on biofuels and the regulation of *Indirect Land Use Change* (ILUC). On 11 September 2013, the European Parliament voted to reduce by 5% the amount of energy produced from biofuels.

Therefore, a common soil protection strategy remains a priority on the EU agenda, all the more so because, through its multiple functions, soil can efficiently meet some of the greatest challenges facing the modern world[70].

Following the international obligations taken up in the fields of sustainable development and combatting climate change, as well as studies and research that were carried out[71], EU legislation is now clearly adopting a new approach with regard to "soil consumption" and soil degradation. This approach involves the overall management of the resource and its uses and, consequently, enhances the integration between sectoral policies and the coordination of different institutional levels, with special emphasis on the importance of urban and spatial policies[72] in combatting environmental degradation and its consequences[73]. Thus, the importance of market protection in this – as in other – EU policies has to be reassessed[74].

---

[70] For a more detailed explanation, Joint Research Center (JRC) Report, *State of Soil in Europe - A contribution of the JRC to the European Environment Agency's Environment State and Outlook Report* – SOER 2010, 2012, 51.

[71] On the importance of research and monitoring activities, Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, *The implementation of the Soil Thematic Strategy and ongoing activities***,** Brussels, 13.2.2012 COM(2012)46 final, available at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0046:FIN:IT. An European Soil Data Centre (ESDAC) has been created.

[72] *Retro*, paragraph 3. See, also, EU Commission, Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, *The implementation of the Soil Thematic Strategy and ongoing activities*, Brussels, 13.2.2012 COM(2012) 46 final, cit.. In this context, also see the *Guidelines on best practice to limit, mitigate or compensate soil sealing* - EC Staff Working Document for information purposes SWD(2012) 101, available at http://ec.europa.eu/environment/soil/sealing_guidelines.htm].

[73] At an international level, with regard to biodiversity, the Nagoya Convention, adopted at the tenth Conference of the Parties to the Nairobi Convention of 1992 in Nagoya, a *Strategic Plan for Biodiversity 2011-2020* and 20 objectives called *Aichi Targets*; On the implementation of the commitments undertaken under the UNFCCC Convention and the Kyoto Protocol, Regulation (EU) no. 525/2013 of the European Parliament and of the Council, of 21 May 2013, on *A mechanism for monitoring and reporting greenhouse gas emissions and for reporting other information at national and Union level relevant to climate change and repealing Decision No 280/2004/EC***.** For further analysis, F. Gaspari, Tutela dell'ambiente, regolazione e controlli pubblici: recenti sviluppi in materia di EU Emission Trading Scheme (ETS), in Riv. It. Dir. pubbl. com., 2011, 1135. Another relevant international programme consisting in the creation of a Global Soil Partnership for Food Security was launched by the FAO (http://www.fao.org/news/story/en/item/89277/icode/); an initiative focusing on the economic aspects of soil degradation in view of creating incentives for investments in sustainable soil management policies (with Germany and the Secretariat to the United Nations Convention to Combat Desertification (UNCCD) - http://www.ifpri.org/blog/economics-land-degradation), considering also the possibility of declaring themselves affected parties in the sense of the Convention (Bulgaria, Cyprus, Greece, Hungary, Italy, Latvia, Malta, Portugal, Romania, Slovakia, Slovenia and Spain have claimed to be affected by desertification in the sense of the UNCCD).

[74] For all, M Renna, *Ambiente e territorio nell'ordinamento europeo*, in Riv. It. Dir. pubbl. com., 2009, 651; M. Mazzamuto, *Diritto dell'ambiente e sistema comunitario delle libertà economiche*, in Riv. It. Dir. pubbl. com., 2009, 1571; A. Von Bogdandy and A., *Solange ribaltata – Proteggere l'essenza dei diritti fondamentali nei confronti degli Stati membri dell'UE,* in Riv. Tri, dir. pubbl., 2012, no. 4; M. Cartabia,

Soil management is currently included in several core strategies linked to horizons 2020[75] and 2050: the road map for the efficient use of resources provides that, by 2020, all EU strategies will be taking account of the direct and indirect effects on soil and will pursue the common objective of "no land take" by 2050[76]. Therefore, the EU requires Member States to evaluate the direct and indirect use of land as well as to assess its impact within all decision-making procedures and, especially, in urban planning policies; to limit as much as possible soil consumption and soil sealing (which, in fact, is a permanent commitment); to carry out the necessary actions to prevent and limit erosion and increase organic matter in soil; to list contaminated sites and plan reclamation operations (by 2015).

As regards urban development processes, EU strategies directly involve urban and spatial development policies, which must conform to the guiding principle of "prevent, limit, mitigate" [77].

With regard to prevention[78], spatial and urban planning should be inspired by the principle of sustainable development. This requires the setting of a realistic limit for soil

---

L'Universalità dei diritti umani nell'età dei nuovi diritti, in Quad. cost., 2009, no. 3; S. Rodotà, *Il diritto di avere diritti*, Laterza, Bari. On the increasing relevance of environmental protection in EU legislation, C. Feliziani, *Il diritto fondamentale all'ambiente salubre nella recente giurisprudenza della Corte di giustizia e della Corte EDU in materia di rifiuti. Analisi di due approcci* differenti, in Riv. It. Dir. pubbl. com, 2012, 999 ff. and particularly 1009. The author underlines that in the ECHR case law, contrary to that of the ECJ, for infringements of Article 8 of the Charter to be assessed, proof of damages to public health is also required, in line with an individualistic approach to human rights protection.

[75] Confirming the European commitment to protecting biodiversity and the ecosystems it safeguards, see European Parliament Resolution of 20 April 2012 on the review of the 6th Environment Action Programme and the setting of priorities for the 7th Environment Action Programme – A better environment for a better life (2011/2194(INI)); Communication from the Commission entitled "The Sixth Community Environment Action Programme-Final Assessment", (COM(2011)0531).

[76] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, *Roadmap to a Resource Efficient Europe*, 20 September 2011, COM(2011) 571 final. This document includes a communication on land use in connection with biotic material (2014), the publication of Guidelines on best practice to limit, mitigate and compensate soil sealing (2012); stresses the need to deal with the issue of indirect land use, following the strategy on renewable energy sources (continuous commitment); proposes a European Innovation Partnership (2011) on agricultural production and sustainability, aimed at guaranteeing that soil functions are maintained at satisfactory levels (by 2020).

[77] Cf. *Guidelines on best practice to limit, mitigate and compensate soil sealing* - EC Staff Working Document for information purposes SWD(2012) 101, available at http://ec.europa.eu/environment/soil/sealing_guidelines.htm; Report of the Joint Research Center, State of Soil in Europe, *A contribution of the JRC to the European Environment Agency's Environment State and Outlook Report – SOER 2010, 2012, Report* EUR 25186 EN, p. 51 ff.

[78] Guidelines on best practice to limit, mitigate and compensate soil sealing - EC Staff Working Document for information purposes SWD(2012) 101, which states "*Limiting soil sealing means preventing the conversion of green areas and the subsequent sealing of (part of) their surface. The reuse of already built-up areas, e.g. brownfield sites, can also be included in this concept. Targets have been used as a tool for monitoring as well as spurring progress. Creating incentives to rent unoccupied houses has also helped in limiting soil sealing*".

consumption at a national and regional level; the integration of the "prevent, limit, mitigate" principle in all public policies, the rationalisation of public incentives (particularly those aimed at promoting social housing, reusing brownfields, limiting transformations of undeveloped fields) [79] ; the establishment of policies aimed at concentrating new development operations in already developed areas [80]; the establishment of policies aimed at improving living conditions in large urban centres; the endorsement and repopulation of small centres as an alternative to sprawl; the identification of agricultural land and landscape areas[81].

Where urbanization-linked land transformation cannot be avoided, the protection of soil quality in planning processes is in any case required: this is achieved by directing these processes towards soil of lower quality and applying mitigation measures able to preserve soil functions (such as, for example, permeable surfaces in open areas and the use of low impact construction methods[82]).

Compensation measures are required when sacrificing good quality soil is unavoidable (e.g. when there is need of infrastructures)[83].

---

[79] The reclamation and use of already urbanized land for settlement purposes is included among best practices against soil sealing: from this viewpoint, funding and incentives for the redevelopment of brownfields are very important. Within the framework of the Cohesion Policy 2007-2013, around 3.5 billion euro are available for the rehabilitation of industrial sites and contaminated land (SEC(2010)360). In the new Financial Framework 2014-2020, the Commission confirms the improvement of the urban environment (COM(2011)612 and COM(2011)614), including the regeneration of brownfields as priority targets of the Cohesion Policy. Cf. EU Commission, Proposal for a Regulation of the European Parliament and of the Council on specific provisions concerning the European Regional Development Fund and the *Investment for growth and jobs* goal and repealing Regulation (EC) No 1080/2006**,** COM(2011) 612 final; ID., Proposal for a Regulation of the European Parliament and of the Council on specific provisions concerning the European Regional Development Fund and the *Investment for growth and jobs* goal and repealing Regulation (EC) No 1080/2006**,** COM(2011) 614 final.

[80] EU Commission, *for environmental policies, Thematic Issue: Brownfields regeneration*, May 2013, available at http://ec.europa.eu/environment/integration/research/newsalert/pdf/39si.pdf.

[81] See the Territorial Agenda of the European Union, "*Towards a More Competitive and Sustainable Europe of Diverse Regions*, approved at the informal meeting of the Council of Ministers for urban development and territorial cohesion, Leipzig (Germany), 24-25 May 2007. The document underlines the need for territorial cohesion and identifies as the main challenge the "*overexploitation of the ecological and cultural resources and loss of biodiversity, particularly through increasing development sprawl whilst remote areas are facing depopulation*".

[82] European Commission, Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions*, The implementation of the soil thematic strategy and ongoing activities***,** Brussels, 13.2.2012 COM (2012) 46 final, available at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0046:FIN:IT:PDF. The Commission is funding research projects on the sustainability of buildings such as, for example, *SuperBuildings* and *Open House*, and on techniques for the redevelopment of *brownfields*.

[83] See Guidelines on best practice to limit, mitigate and compensate soil sealing - EC Staff Working Document for information purposes SWD(2012) 101, cit., which stresses that it is impossible to completely compensate the effects of soil sealing. Therefore, the objective has rather been to sustain or restore the overall capacity of soils in a certain area to fulfill (most of) their functions. For further details, European

The agricultural policy is probably the EU policy that has the greatest impact on land use[84]: The Decision of the European Parliament and of the Council on accounting rules and action plans on greenhouse gas emissions and removals resulting from activities related to land use, land use change and forestry[85] requires from Member States to include the conversion of forest and agricultural land in their accounts for climate mitigation efforts and to account for greenhouse gas emissions resulting from the removal of topsoil[86].

There emerges a tendency to use an integrated approach with regard to soil management, through a direct and full commitment to – and rethinking of – spatial and urban planning policies in view of defining and creating a balance between primary goods and interests. This opens up broader and uncharted areas of intervention for the EU, on

---

Commission, Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions**,** *The implementation of the soil thematic strategy and ongoing activities***,** cit..

[84]Cf., on urban mobility, COM(2009) 490.

http://ec.europa.eu/transport/themes/urban/urban_mobility/doc/com_2009_490_5_action_plan_on_urban_mobility.pdf.

[85]Cf. Decision of the European Parliament and of the Council on accounting rules and action plans on greenhouse gas emissions and removals resulting from activities related to land use, land use change and forestry**,** May 21st 2013, n. 529/2013/EU; the European Parliament issued its own Resolution of 12 March 2013 (COM(2012)0093 – C7-0074/2012 – 2012/0042(COD)), available at http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+TA+P7-TA-2013-0063+0+DOC+XML+V0//IT

[86] In this matter the Commission was able to underline the importance of strengthening the efficacy of these Directives by steering them towards the evaluation of the effects of climate change and biodiversity, towards potential alternatives and better data collection. For the revision of the EIA and SEA procedures see Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment as well as the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, *Roadmap to a Resource Efficient Europe***,** 20 September 2011, COM(2011)571 final. The proposal for a Directive of the European Parliament and of the Council modifying Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (COM(2012)0628, was approved by the Parliament in October 2013. In the same year, the EU Commission published the following documents: EU Commission, *Guidance on integrating climate change and biodiversity into Strategic Evaluation Assessment*, 2013, available at http://ec.europa.eu/environment/eia/pdf/SEA%20Guidance.pdf; ID., *Guidance on integrating climate change and biodiversity into Environmental Impact Assessment*, 2013, available at http://ec.europa.eu/environment/eia/pdf/EIA%20Guidance.pdf.

In Germany, Austria, Slovenia, for instance, EIA procedures also measure the impact of infrastructures on the soil, starting from the multiple dimensions of this resource. In Austria, strategic environmental evaluations also assess the impact of rezoning on the soil, defining three levels (low, medium, high): account is taken of both the constructive and the operative phase, as well as of both short-term and long-term effects. The same applies to Germany: the cities of Stuttgart and Osnabrück, for instance, use a technique for evaluating the impact of development activities on soil which also takes account of the soil's various functions. On the use of eco-bonuses to compensate consequences linked to land use changes, see Guidelines on best practice to limit, mitigate and compensate soil sealing - EC Staff Working Document for information purposes SWD(2012) 101, cit. e W. Lexer, S. Huber, A. Kurzweil, *Urban Soil Management Strategy, Existing soil management approaches within urban planning procedures - Transnational Synthesis*, cit..

the grounds of the subsidiarity principle and driven by the principle of sustainable development and ecosystem biodiversity.

5. From land protection to land and land use management: a comparative analysis of regulatory models and practices

5.1. Premise

Due to the lack of an EU framework action, the issue of land use and management has been addressed by each Member State with policies that differ greatly as regards areas of competence, institutional levels and technical/legal solutions.

A recent study dedicated to land management approaches and techniques has shown that solutions and good practices are rather fragmented and diversified: in the 6 countries and 11 institutional levels that were examined, researchers identified 47 different methods for managing topsoil transformations.

From a strictly legal point of view, the source and nature of these measures/approaches vary greatly: they range from legislative measures implemented at a national, regional or local level, to regulatory measures or planning acts and other administrative decisions passed by local administrations. As for their content, they range from legal standards, restrictions on land use or incentives (including fiscal incentives) to promote good land use practices, to mechanisms for measuring and monitoring data and soil quality, administrative assessment procedures, agreements between public and private bodies as an alternative to administrative acts.

Therefore, the study of national or subnational (regional and local) legal systems shows a multifaceted approach to the problem of land use and management. However, the solutions to this problem are often implemented at a sectoral level and rarely based on an integrated approach.

In this paragraph we will focus on a number of *land management approaches*[87] experimented within and outside the EU and, especially, on those directly or indirectly connected to spatial and urban planning.

5.2. Quantitative limits: critical aspects of measuring land take/consumption

There exist many spatial and plans, both in Italy and abroad, that take account of the ideal of "no land take"[88] or, at any rate, aim at limiting urbanization in terms of both volumes and space.

On the contrary, only very few countries have introduced limits and thresholds for land take by law, nor do they require planning authorities to introduce such limits and thresholds.

In Germany the Federal planning law, for instance, requires that urban and spatial development should be subject to the principle of sustainable development as regards both construction methods and city layout. This implies minimizing soil sealing of non developed land and prioritizing the reuse of already developed land (§ 1 e §1a Baugesetzbuch, BauGB)[89].

In France, the *Loi Grenelle II* provides that spatial and urban plans should include quantitative limits to the development of urban areas, thus reinforcing the provisions of the "*Spatial coherence scheme"* (*Schéma de cohérence territoriale* / SCoT) and of the

---

[87] For the definition, cf. W. Lexer, S. Huber, A. Kurzweil, *Urban Soil Management Strategy, Existing soil management approaches within urban planning procedures -Transnational Synthesis*, April 2010, funded by Central Europe ERDF, cit..

On the U.S. legal system, K. E. Portney, *Taking Sustainable Cities Seriously: Economic Development, the Environment and Quality of Life in American Cities The MIT Press, Cambridge, MA, 2003*; P.G. Lewis, *Shaping suburbia: how political institutions organize urban development*, University of Pittsburg Press, Pittsburg, 1996; R.J. Lempert – S. W. Popper – S.C. Bankes, *Shaping the next one hundred years: new methods for quantitative, long-term policy analysis*, RAND, Pittsburg 2003; E. Sadoulet – A. De Janvry, *Quantitative Development Policy Analysis*, J. Hopkins University Press, Baltimore/London, 1995; P. Hawken, A. Lovins, L. Hunter Lovins, *The Next Industrial Revolution, "Natural Capitalism: Creating the Next Industrial Revolution"*, Back Bay Books, 2008; G. Adell, Strategic Environmental Planning and Management for the Peri-urban Interface Research Project - *Theories and models of the peri-urban interface: a changing conceptual landscape*, 1999, available at http://discovery.ucl.ac.uk/43/1/DPU_PUI_Adell_THEORIES_MODELS.pdf.

[88] A similar limit – zero land take – was introduced by the European strategy for an efficient use of resources: *retro*, footnote no. 76 .

[89] The text is available at http://www.iuscomp.org/gla/statutes/BauGB.htm#1. In scientific literature on the relationship between city shape and sustainability, G.M. Chiri- I. Giovagnorio, *The role of the city's shape in urban sustainability*, in International Transaction Journal of Engineering, Management, & Applied Sciences & Technologies, 2012, available at http://tuengr.com/V03/245-258.pdf.

"Sustainable urban development programme" (Projet d'Aménagement et de Développement Durable / PADD). At a supra-local level, the *Schéma de cohérence territoriale* is required to set the quantitative limits for land take, with particular reference to natural, agricultural and forest land (new art. 122-1-2 of the "Code de l'Urbanisme"). These measures are then implemented in the report accompanying the PLU, also including data on population growth, and data from the *Projet d'aménagement et de développement durable (PADD)*[90], focusing particularly on urbanization and containing urban sprawl.

In Italy, certain recent regional laws, reflecting different models and approaches, aim at limiting land take and, at the same time, promoting the reuse of already developed land, by fixing quantitative and/or spatial limits to new development areas[91]. On the contrary, at

[90] Law no. 2010-788, of 12 July 2010, regarding the "*engagement national pour l'environnement"* (ENE). This law (also) impacted on urban development, at the end of a reform process lasting many decades, aimed at updating existing procedures according to to the principle of sustainable development. Certain reforms are of particular interest: the *Projet d'aménagement et de développement durable (PADD)* is expected to set "the objectives for controlling land take and sustainable development*"* (new Art. L. 123-1-3 of the Code de l'Urbanisme - CU) ; moreover, the document presenting the PLU, must analyse the use of natural, agricultural and forest land and justify, at the same time, the objectives of land use change and sustainable development, taking account of the objectives of land take and sustainable development contained in the ScoT and also of the data on population growth (new Art. L. 123-1-3 of the CU). Furthermore, modifications, already introduced by Law no. 1208/00 on solidarity and urban renewal (loi n. 2000-1208, 13 January 2000 on "solidarité et au renouvellement urbain – loi SRU*"*), the *Programme Local de l'habitat* is a component of the PLU and implements and deepens the issues and objectives of the ScoT: in particular, it calculates the amount of existing public and private dwelling units, evaluates the need for new housing units based on previous and expected population growth, undertakes actions of urban renewal with the primary aim of limiting the phenomena of periurbanization and artificialization of new land as well as the fragmentation of eco-landscapes, in accordance with the objectives of the PDD and the Loi Grenelle. Its role was also reinforced by Law no. 61 of 18 January 2013, no. 61 which gave the Government the possibility, by means of a modification of the Code of public property (Art. L. 3211-7, Code général de la propriété des personnes publiques), to sell available units in order to cover housing needs and at the same time to combat land artificialization given that the greater part of this type of land is within urban areas (option in favour of EPCI and social housing quota). For more details on measures against land take in France, see document by the Ministry for the Environment, sustainable development and housing – Centre des ressources documentaires Amenagement Logement Nature, *L'étalement urbain en France*- Summary, February 2012, available at http://www.cdu.urbanisme.equipement.gouv.fr/IMG/pdf/Synthese_Etalement_Urbain2012.pdf. In letteratura, J.C. Castel, *Ville dense, ville diffuse, les deux faces de l'urbanisation*, Études Foncières, 2010, n° 147; E. Carpentier, *Les objectifs assignés aux documents d'urbanisme après la loi "Grenelle II"* , Revue de droit immobilier, 2011, n° 2; Y. Jegouzo, *L'ambitieuse loi portant engagement national pour l'environnement*, Actualité Juridique Droit Administratif, 2010, n° 30.

[91] See Lombardy Regional Law no. 31/2014, *Disposizioni per la riduzione del consumo di suolo e per la riqualificazione del suolo degradato* which significantly reinforces the measures for the control of land take already introduced by R.L. 4/2008 in National Law no. 12/05 (Art. 8, comma 2, letter b) and bis, comma 4, letter a) for communities under 2000 inhabitants), focusing on quantitative indicators for measuring land take at a regional level, on the division of the regional territory in homogeneous areas and the incorporation of quantitative limits in municipal urban tools (excepting the principle of minimum limit and of reuse); Tuscany R.L : no. 65/2014, *Norme per il governo del territorio*, which favours the concentration of changes of already urbanized areas. For a comparison of different approaches, see Art. 1, co. 2 of R.L. no. 31/2014 and Art. 3, co. 1, of R.L. 65/2014. Many proposals for laws on the subject of land take have been submitted to Parliament: ex multis, legislative proposal no. 1050, *Disposizioni per il contenimento del consumo di suolo e la tutela del paesaggio*, providing for the concentration of new changes only within already urbanized areas

a national level, up to now the reuse of developed land has been promoted only through fiscal incentives (see art. 17 of D.L. n. 133/2014, reducing certain tax burdens related to construction costs) with the exception of some draft bills on land take.

In other legal systems – such as those of the UK, some member States of Austria[92], some member States of the USA[93], South Africa[94], Australia, and Japan[95], to which we'll come back further on - the expansion of urban areas has been limited by setting *urban growth boundaries (*UGBs).

The variety of solutions arising from these approaches makes it necessary to establish a minimum common denominator to facilitate their classification. By quantitative soil management approaches we mean measures that fix parameters or limits in order to control land development processes.

Quantitative limits to topsoil transformation can be fixed in absolute figures[96], in percentage terms (in relation to the total territory or to existing volumes)[97], or by ranking the impact on development processes [98] or, as indicated above, in terms of space.

(Art. 6); legislative proposal no. 948, *Legge quadro in materia di valorizzazione delle aree agricole e di contenimento del consumo del suolo* (also known as Salvasuoli "ex Catania" Draft Bill).

[92] In Austria, the definition of spatial limits to settlements is contained in regional territorial plans. For more details, W. Lexer -S. Huber -A. Kurzweil, *Urban Soil Management Strategy, Existing soil management approaches within urban planning procedures - Transnational Synthesis*, April 2010, funded by Central Europe ERDF, cit., p. 84-85.

[93] Among the most important ones, Oregon, Washington, Tennessee, California.

[94] *Municipal system Act* no. 32/2000. For more details on the situation in South Africa, Y. Turok, *Urbanization and development in South Africa: economic imperatives, spatial distortions and and strategic responses,* Urbanization and emerging population issue - Working paper no. 8, October 2012, published by the International Institute for environment and development – United Nations Population Fund, available at http://pubs.iied.org/pdfs/10621IIED.pdf.

[95] In the State of South Australia, the Housing and Urban Development (Administrative arrangements) (Urban renewal) Amendement Bill 2013 was recently presented; it gives the Minister the power to set urban limits (*precincts*) within which urban development must be contained; moreover, it provides for the establishment of an Authority for Urban Renewal and for the rehabilitation and rationalization of development activities. Previous attempts to limit urban sprawl through UGBs (e.g. in Melbourne) have been revised: the 30% limit for new buildings beyond the consolidated city by 2020 and 20% by 2030, increased to over 40%, and was eventually suspended.

[96] An example can be found in the Piano di Governo del Territorio - PGT (Local Urban Plan) of the Municipality of Desio.

[97] The city of Dresden, for instance, has set a maximum limit for long-term development corresponding to 40% of the total consolidated city. In order to encourage the respect of this limit, a compensatory point system was introduced (Bodenausgleichskonto) for activities in non urban areas (environmental compensations, measures for de-sealing infrastructures within cities): compensations can be made directly by the developers or, alternatively, an equivalent monetary amount is paid to the city's competent Environmental Authority in order to undertake de-sealing actions. Vice versa, changes within cities are excluded from the compensatory measures. The achieved result can be quantified as roughly 4 hectares of de-sealed soil per year (since the year 2000).

[98] As, for example, in the city of Stuttgart.

When limits depend on planning processes, their time validity is that of planning tools. They can, therefore, be redefined through their own amendment procedures, which often go against of the principle of sustainable development. This is why some planning law reforms aim at providing greater stability and continuity to certain provisions of spatial and urban plans[99].

Some cities[100] have experimented thresholds which are applied progressively until land demand for development operations reaches the foreseen quantitative target (for instance inner city boundaries).

Obviously, there is no optimal or absolute threshold. Just consider the fact that some countries have little or no need for limiting land consumption. Moreover, development processes are not equally distributed across all territories: some areas have become depopulated while in others the population has increased and have even become overpopulated. The demand for land also depends on needs that must be satisfied: i.e. agricultural land can be exploited both for food or biofuel production with very different impacts on land take (especially when indirect land use effects are taken into consideration). Going further, even types of crops and growing techniques have a different impact on land take and all these differences are likely to change significantly in time, also as a result of technological progress.

Consequently, to be effective any quantitative limit for land take must be able to face - and to adapt itself to - constantly changing parameters.

The introduction of thresholds or limits, is therefore one of the most problematic aspects of land management policies, also because existing legislative and regulatory measures – most of which are associated with spatial and urban planning law and tools - often cannot deal with it efficiently: e.g. in Italy as well as in France, the setting of quantitative limits for land take is actually decided by local administrations, leading to different thresholds that cannot be fully controlled at a national or supra-local level.

[99] This is the case, for instance, in French legislation following the reform brought about by the Loi Grenelle II (the important elements in terms of sustainable soil development are included in the PaDD, as it is part of supra-local framework documents and of the PLU) or in Germany. The principle of sustainable development is also included in certain planning experiences, which produce criteria for sustainable land use: for example, the NBS criterion established by the city of Stuttgart in order to guarantee a balanced distribution of commercial and residential functions within already developed areas, thus limiting the use of new areas.

[100] As, for example, in the city of Stuttgart.

Even the ideal of "no land take" does not provide an unequivocal answer either as it is compatible with a variety of technical and legal solutions and – strange as it may seem – with a variety of land use models and impacts.

This ideal of "no land take" inspires actions that generally share the will to limit, more or less drastically, the conversion of new (additional) undeveloped land for urbanization processes. However, the effectiveness of these actions for limiting land consumption depends on a series of planning provisions and land use regulations: on the fact that building operations are prohibited outside urban boundaries [101] or in specific parts of the city planning area [102]; on the fact that limits do not apply to public services and infrastructures or, more generally, to some development operations in the public interest[103]; on the fact that the principle of "no land take" is linked to the total building volume allowed[104].

The setting of these parameters does not only express the intended objective of land saving, but also reflects the balance between this and other objectives and policies, such as the promotion of agricultural activities for food or energy production, the need for infrastructures and public services, the safeguarding of landscape and historical areas or financial and fiscal policy strategies.

The EU aim to achieve "*no net land take*" by 2050 tends to maintain unchanged the net *stock* of land used for settling purposes, in accordance with the principles of recycling or circular economy, rather than just limiting land take. Moreover, by dissociating urban

[101] As, for example, the new Piano del Governo del Territorio - PGT (Local urban plan) of the Municipality of Cassinetta di Lugagnano. At a legislative level, see Art. 4, comma 2, Tuscany R.L. no. 65/2014.

[102] An example is given by the PAT of the Municipality of Cortina; see also Draft Bill no. 1050, in relation to which see S. Ronchi – S. Salata, *Limitazioni del consumo di suolo nell'ordinamento nazionale: riflessioni sulle proposte normative*, in Territori, no. 14/2013, available at http://www.consumosuolo.org/Images/Pubblicazioni/Copia%20di%20territori%2014_%20salata_ronchi.pdf.

[103] European studies on soil sealing demonstrate the awareness of the fact that infrastructures, and especially transport infrastructures, contribute significantly to the problem of soil sealing particularly because they involve premium quality soil. For this reason it would be a good idea to redefine policies of social cohesion so as to include soil protection. For further details, *retro*, paragraph 4. The decoupling of territorial and urban policies and transport policies generates certain paradoxes: in the Municipality of Cassinetta Lugagnago, favouring "zero land take", it was decided not to include in the PGT a road link to Malpensa airport which had been included in previous, binding, district spatial plans because it went against local decisions regarding land take; the institutional battle is still ongoing.

[104] The new structural plan of the Municipality of Florence is defined as a "zero land take" plan: indeed, new development activities will be concentrated in brownfield/underused/derelict sites, thus increasing, through a system of building bonuses, the availability of green and open land.

development from land take it may no longer necessary to freeze the perimetres of urban areas.

More in general, the aim of "*no land take*" does not a priori exclude new development operations as many planning practices demonstrate.

The "*no land take*" objective can, in fact, be associated with varied and even contrasting development models, both of low and high density. In many planning experiences (and even in some legislative acts), the densification of urban areas – as summarized in the modern and sustainable " *Compact Garden City"* formula – allows to decouple settling from additional land take[105].

What all considered legislative and regulatory experiences have in common is a tendency to assess and rationalize decisions regarding growth, both in terms of space and volume: i.e. forecasting growth – and thus quantitative limits for land take and land use regulations - according to data referring to the demographic, economic and social development of single territories.

[105] The ideal of the compact city provides an answer to the problem of population growth in many parts of the world and is also perceived as a possible solution to the problem of land take: for more details see, PLUREL, *Peri-urban land use relationships – strategies and sustainability assessment tools for urban rural linkages integrated project*, Publishable final activity report, 13 May 2011, p. 15 ff., available at http://www.plurel.net/images/PLUREL_final_publishable_activity_reporty.pdf which also highlights the effects of non-sustainable and imperfectly balanced compaction processes. Hence, the Compact Garden City model which is the expression of a sustainable city (in terms of the environment, development and quality of life, energy self-sufficiency, production/disposal of waste.

Densification constitutes a traditional trend of urban development in Japan (on which, *amplius*, paragraph 5.4) and many major cities around the world have adopted this model (Aukland, Hong Kong, Singapore). For a detailed account, see the OECD report, *Compact city policies: a comparative assessment*, available in summary at http://www.oecd.org/gov/regional-policy/compact-city.htm. In Europe, the European Commission, in its *Thematic Strategy on the Urban Environment* (cit.) had indicated densification as an at least partial solution to the problems of population growth and land take. The densification approach was used by the region of The Hague, where 80% of development activities had to take place on already urbanized land. The cities of Leipzig, Manchester, Greater Paris Area, also provide interesting examples. In Italy, the new urban plan of the city of Genoa is an interesting example of densification.

France has also recently taken steps in favour of densification: the *Loi Grenelle II* allows Municipal Councils to authorize, with the exception of certain protected areas (*Zone de protection du patrimoine architectural, urbain et paysager - ZPPAUP*), volume higher by 30% than what is allowed by the PLU or other planning tools, in order to promote densification. Moreover, the SCoT can introduce minimum density rates and the same can be done by the PLU in areas close to public transport. Densification is also encouraged through fiscal measures: Art. 28 of Law no. 1658, of 29 December 2010, established a development tax which substitutes all previous obligations (taxe locale d'équipement- TLE), and which aims at combating under-utilisation (in terms of urban density, thus promoting the efficient use of land). Cf., for more details, Ministry for the Environment, Sustainable Development, Transport and Housing – Centre des ressources documentaires Aménagement Logement Nature, *L'étalement urbain en France*- Summary, cit., 15; Commissariat général au développement durable (CGDD) -Service de l'observation et des statistiques (SOeS), *Urbanisation et consommation de l'espace, une question de mesure*, La Revue, March 2012, available at http://www.developpement-durable.gouv.fr/IMG/pdf/Revue_CGDD_etalement_urbain.pdf.

These considerations demonstrate that quantitative measures should also go beyond the mere "land take" perspective and be able to ensure – together with other measures and regulations – a better land (and land use) management, taking account of the variety and complexity of land uses and of the interests at stake.

Moreover, it should be noted that quantitative limits do not solve all problems linked to land and land use management. Strange as it may seem, when the setting of quantitative limits for land take is required these problems are even accentuated and new challenges have to be faced: in fact, by limiting land take and the range of permitted land uses, both the balance among fundamental needs as well as the fair distribution of burdens and benefits associated with development processes will become increasingly more difficult[106] with highly populated territories being the most affected.

5.3. Quantitative measures and land use management: new models, principles and regulatory needs

In this context, in order for quantitative limits to be able to ensure better land management, not only is a cultural change needed - something that is difficult to achieve from one day to another - but also a general rethinking of how to guarantee better land use management and increase the effectiveness of the many and complex principles, legal tools and decision-making processes involved.

From a first standpoint (*not all land and land uses are equivalent*), quantitative limits for land take and land use regulations should be applied taking into consideration both the value of the specific land use associated to a development process or building operation and the value of the designated area : in fact, as the impact of urbanization and development processes depends on both soil quality [107] and the value of land use,

[106] For example, the new local urban plan (in Italian, Piano di Governo del Territorio -PGT) of the Municipality of Cassinetta di Lugagnano.

[107] In this respect, of great interest is the method of measuring the impact of land use changes elaborated by the city of Stuttgart, extensively mentioned in this paragraph; at a regional level (Baden-Württemberg) guidelines were laid down for calculating both the loss and the increase of soil functions. For a deeper analysis, W. Lexer, S. Huber, A. Kurzweil, *Urban Soil Management Strategy, Existing soil management approaches within urban planning procedures*, cit. 77 f.. In the Czech Republic, Law no. 334/1992 and ff. amendments and revisions, on the protection of agricultural land provides for a classification system of agricultural land based on the measurement of the soil's so-called ecological units, which makes it possible to measure the natural, productive and economic potential of agricultural land, In Italy, a significant experience is related to the Land Map of the Piedmont Region (Mappa suoli della Regione Piemonte): the classification of land takes into consideration the various ecological services offered and thus constitutes an

planners and decision makers should be able to calculate and measure these two parameters. In this way, it will be possible to give each process a mark that will sum up the relationship between all these variables[108].

A good example of how to rethink quantitative limits for better land use management is provided by the *Stuttgart Soil Protection Concept* ("Bodenschutzkonzept *Stuttgart (BOKS))*: introduced in 2006, it consists in fixing a maximum quantity of undeveloped soil to be transformed in terms of points (up to a total of 1000 points corresponding to 12% of the total city planning area). The aim is to preserve the quantity and the features of soil considered of high and good quality; the points given to each development process or operation depends on the size of the development area and the value of the intended land use. Thus, development operations affecting lower quality land are given fewer points for the same area size and intended land use[109]. The points attributed to each building operation can therefore be calculated beforehand and even measured while the transformation is being carried out, while the threshold score is subsequently updated on the basis of the points that were actually used.

This approach, contrary to that based on the metric indexing of land take, could be useful for promoting new spatial and planning policies, able to assess and compare various development options, both during the planning process and the implementation phase. Moreover, it allows for some flexibility, without hindering urban development processes with too many limits, standards and land use regulations, in line with the so-called *performance zoning* approach[110].

---

important basis for evaluating – within the framework of territorial and urban policies – the sustainability of topsoil transformations.

[108] For a more detailed analysis, W. Lexer, S. Huber, A. Kurzweil, *Urban Soil Management Strategy, Existing soil management approaches within urban planning procedures*, cit. 69 s..

[109] To be able to function, the model requires that the distribution of the areas likely to be transformed be known and documented in the official plans and that a mapping of the soil's quality on the basis of a series of parameters be included. The "Soil-Soil Quality Map" of Stuttgart – drawn up on the basis of a land map, a soil sealing map, the register of contaminated sites – indicates the overall quality of land situated within the borders of the urban territory, taking account of all the various soil functions that have to be protected by this law (cf. Federal Law on Soil Protection, 1998), without excluding those functions that are influenced by human activity, such as pollution or soil sealing. Soil quality is thus represented on a scale of six levels (from 0 to 5), allowing to calculate the points for each activity within the framework of planning and programming processes. For more details, see W. Lexer, S. Huber, A. Kurzweil, *Urban Soil Management Strategy, Existing soil management approaches within urban planning procedures*, cit. 69 s. In Italy, the Land Use Charter is foreseen in Art. 3 of Lombardy R.L. no. 31/2014.

[110] *Performance zoning* was originally introduced as a way of regulating building activities in the Building Ordinance/Code: it was subsequently used as an alternative zoning technique to the traditional one. For a more detailed analysis, see D. R. Porter, *Flexible zoning: how it works, Land use Inst.,* 1988, 11, where the author states: "Theoretically, in a regulatory system based solely on performance standards, any use

As regards the effectiveness of quantitative limits for better land management, a rethinking of urban planning tools and urban planning law is required, starting from some general principles such as the principles of sustainable development and proportionality[111].

Limiting the transformation of undeveloped land and confining development within urbanized areas makes it necessary, for instance, to overcome existing barriers to the implementation of high density urban settlements. It also makes it necessary to identify and map *brownfields* and ensure they are made available, are regenerated, and fulfill the requested quality standards for the intended uses[112]. For this to happen, more effective and responsible urban planning and land use regulatory tools - regardless of whether they are laid down by law[113] or by building and land use regulations - are required, given that neither the establishment of the principle of prior reuse of developed areas nor the setting

---

could locate adjacent to any other use, provided that it could satisfy the criteria and standards contained in the ordinance."; F. W. Acker, Note, *Performance Zoning,* in Notre Dame L. Rev., 1991, 363, where the author draws attention to the difficulty in monitoring compliance to these standards.

[111] These are the conclusions reached by Moroni in *La città responsabile*, cit., 60 ff.; in legal literature, V. Cerulli Irelli, *Il contributo del giudice amministrativo alla tutela del territorio e dell'ambiente*, lecture at the Conference *Giustizia amministrativa e crisi economica*, Rome, 25-26 September 2013.

[112] The EU believes, for example, that *brownfields* can be put to agricultural uses other than food production such as biomass production: this would make it possible to reduce the negative impact of energy policies encouraging the use of biofuels. For more details: EU Commission, *Science for environmental policies, Thematic Issue: Brownfields regeneration*, cit.. An interesting example of sustainable reuse of brownfields is the experience of the City of Stuttgart, see W. Lexer, S. Huber, A. Kurzweil, *Urban Soil Management Strategy, Existing soil management approaches within urban planning procedures*, cit., 70.

[113] In Germany, for example, in order to limit changes in the use of urbanized land, the Federal Law on Building (retro, paragraph 5.2.) gives priority to the reuse of *brownfields*, to increasing the density of already urbanized land, to promoting the use of under-exploited urbanized land, i.e. redefining urban policy where there are undeveloped or enclosed areas. These provisions are accompanied by quite strict regulatory *standards* aimed at protecting topsoil from urbanization activities so that its functions are preserved and maintained intact, particularly in the case of excavation activities (§202 and §9, 20); furthermore, this law aims at guaranteeing specific efficiency levels as regards the construction of buildings and the materials used and, therefore, at minimizing the negative effects of urbanization processes.

Similar measures, aimed at reducing the impact of settling processes, can be found in Austrian legislation (Law on the Conservation of Nature LGBl 1998/45 (L480-000 Wiener Naturschutzgesetz); in the legislation of the Czech Republic (Law no. 295/2004, Law no. 205/2004, Law no. 24/2004, Baugesetzbuch, BauGB, §1a and § 9); in Slovenian legislation (Official Gazette of the Republic of Slovenia, No 41/04, changes in 39/06, 49/06, 66/06, 112/06, 33/07, 57/08, 70/08 and 108/09) ["Zakon o varstvu okolja (ZVO-1), 2004)"]; in France, with the Loi Grenelle II. References to legislation, excepting French legislation, are available extensively in W. Lexer, S. Huber, A. Kurzweil, *Urban Soil Management Strategy, Existing soil management approaches within urban planning procedures*, cit., 70; as regards France, see Comité national du développement durable et du Grenelle de l'Environnement (CNDDGE), *Rapport d'évaluation du Grenelle de l'Environnement*, October 2010, p. 25, available at http://www.developpement-durable.gouv.fr/IMG/pdf/EY_Evaluation_Grenelle_Rapport_Final_101026_entier.pdf.

In the case of Italy, see, for example, Art. 7 of Lombardy R.L. no. 4/13.

of quantitative limits for land take alone are enough to combat land consumption and improve better land management,[114].

Merely promotional measures are similarly inadequate, whether they consist in greater flexibility, increased building indexes [115], tax reductions [116], or in lower compensatory charges/burdens[117].

Apart from being inadequate in themselves, such measures are often conflicting and contradictory: this is due to the fact that they are associated with different public policies, are laid down by a large number of different levels of government and therefore lack a

[114] The planning experience of Vienna follows this trend; for Italy, see the latest structural plan of the City of Florence. For scientific literature, S. Schädler, M. Morio, S. Bartke, M. Finkel, *Integrated planning and spatial evaluation of megasite remediation and reuse options. Journal of Contaminant Hydrology*, 2012; S. Schädler, M. Morio, S. Bartke *Designing sustainable and economically attractive brownfield revitalization options using an integrated assessment model, in Journal Env. Management*, 2011; I. Declercq, V. Cappuyns, Y. Duclos, *Monitored natural attenuation (MNA) of contaminated soils: State of the art in Europe - A critical evaluation*, in *Science of the Total Environment*, 2012. For a more detailed account on the value of brownfields and, in particular, on the input of Landscape Preference Studies (LPS): C. Ruelle, J-M. Halleux, J. Teller, *Landscape Quality and Brownfield Regeneration: A Community Investigation Approach Inspired by Landscape Preference Studies*, in *Landscape Research,* 2012; for broader considerations on the value of tradition, S. Moroni, *La città responsabile*, cit., 79 ff..

[115] Incentives regarding volume have been recognized by the Loi Grenelle II and by Law no. 61, of 18 January 2013, on French housing policies; in Italy, by certain regional laws (particularly in the so-called Regional Housing Plans: see, for instance, Lombardy R.L. no. 4/2013) or, in any case, by the urban-related provisions of many Italian and foreign regulatory plans. These incentives are linked to particular characteristics of urban planning activities, in terms of energy saving, localization and social objectives of housing units in buildings. Therefore, these incentives related to volume do not always favour the reuse of land or transformations within the inner city.

[116] Many local public authorities in Europe seek to increase the competitivity of their territories by keeping taxes on land use artificially low. In general, however, the very mechanism that links the payment of urbanization taxes to transformation phenomena strongly encourages land take. For this reason, the Municipality of Cassinetta di Lugagnano, one of the Italian municipalities that based its urban development plan on the ideal of "zero land take" raised taxes so as to compensate for the lower income generated by development fees. Other public institutions have implemented fiscal policies aimed at counteracting such phenomena: for instance, the funding mechanism of the Green Areas Fund provided for in Article 43, comma 2bis of R.L. no. 12/2005, introduced by R.L. no. 7/2010. In Portugal, some municipalities have implemented taxation systems (Municipal Urbanization Taxation - MUT) in such a way so as to encourage urbanization within the urban perimeter, rendering activities undertaken outside this perimeter more costly (in fiscal terms). At the same time, local taxes on industrial areas were reduced in order to create new jobs and attract young people, while fiscal incentives were provided for the redevelopment of the historic city-centre. This model was put to the test, for example, by the city of Tomar: a city with 43.000 inhabitants, of whom 16.000 residing in the historic city-centre and, hence, greatly affected in the past by urban sprawl. However, to be effective, the new model requires that owners must clearly understand that taxation changes according to the locality of the building operation. Moreover, administrations are required to invest in medium-long term policies. For a deeper analysis, J. Almeida, B. Condessa, P. Pinto, J. Antunes Ferreira, *Municipal Urbanization Tax and land-use management— The case of Tomar, Portugal*, in *Land Use Policy*, 2013, 336-346. For more details on the role of taxation as an alternative measure for containing urban sprawl, P. Cheshire - S. Sheppard, *Taxes* versus *regulation: the welfare impact of policies for containing urban sprawl*, in D. Netzer (edited by), *The property tax, Land use and land use regulation*, 2003, 147 ff..

[117] It is, for example, the case of Germany with its environmental compensation system based on eco-bonuses, European Commission, *Guidelines on best practice to limit, mitigate or compensate soil sealing*, SWD(2012) 101 final/2, cit..

coordinated approach for combatting the indiscriminate use of land: building and housing policies are not always coordinated with the planning of new development areas; fiscal policies are often conditioned by the quasi-federal structure of States; energy policies are often linked to bonuses that impact on the sustainability of urban transformations. Consequently, land and land use management depends on a fragmented and often uncoordinated decision-making process.

5.4. Spatial/allocation management measures for land use changes

Among these quantitative measures we can also include those land management measures which consist in delimiting, on one hand, areas or zones in which urbanization processes shall be concentrated and, on the other, areas which are excluded *a priori* from such processes and, hence, from some land uses. These measures are generally contained in planning provisions and tools.

A typical example is provided by Japanese planning legislation where the distinction between the *Urbanization promotion area – UPA* and the *Urbanization Control Area – UCA* is a prerequisite for traditional land use regulation and zoning, which, inter alia, are related only to UPAs.

This urbanization and land use control system – which was introduced in 1968 and is known as the "*line-drawning system*" because it is based on the actual drawing and creation of the two separated areas – implies the prior identification of the *city planning areas*[118] and, subsequently, the creation of the two macro areas.

Urban planning decisions and land use regulations are therefore strongly conditioned from the start[119] by planning decisions emanating from central and not municipal levels of government[120]: for instance, *city planning areas* do not correspond to the territory of single municipalities. Moreover, in the Urbanisation Control Area (UCA) - by means of national regulatory constraints and standards (regulations/plans/administrative decisions) – certain

[118] That do not correspond to the entire Japanese territory.

[119] The Master plan of the Prefecture is in any case subject to the provisions of the national plan containing uniform standards and the guidelines of the development process and its planning. For a summary see the document available at http://www.auick.org/database/training/2006-1/PR/WS2006-1SAndo.pdf

[120] The Master plan must be approved by the Prefectures, first institutional sub-national level of Japanese legislation.

land uses are *a priori* excluded, while compatible development/urbanization processes, must in any case be authorized[121].

This model allowed Japan to face the severe urbanization process that had resulted from the economic boom of the '60s and had led to the creation of a small number of very high density areas. For instance, 73,9% of the total territory doesn't fall within the *city planning area*, while UPAs represent only 3,8% and UCAs 10% of the total territory; the remaining 12,3% is made up of territories that belong to city planning areas, but are neither UPAs nor UCAs. This fact, which is very significant in itself, becomes even more so when one considers that only 7,5% of the population lives outside *city planning areas*: 66,7% live in UPAs and 9,8% live in UCAs, while the remaining 16% of the population lives in the undivided part of the city planning area. Therefore, over 110 million people, out of about 120, live inside city planning areas, i.e. on less than 25% of the territory (and roughly 85 million people live on 3,8% of the territory, which corresponds to 1,43 million hectares)[122].

Some Asian countries with a large agricultural sector and showing significant economic growth look favourably upon the Japanese *line-drawning system*: in Bangladesh[123], for example, some large municipalities are trying to combat land take by delimiting areas where urbanization is allowed and where all new development operations must be concentrated. The primary objective is to protect the vast agricultural areas from urbanization schemes that progress at a rate of 1% per year[124]. Although the country does have building regulations for monitoring land use, certain reforms are felt to be necessary: i.e. the establishment of criteria for the identification of urban promotion areas and their

[121] Cf., in the case of Italy, Draft Bill 1050 regarding *Norme per il blocco del consumo di suolo e la tutela del paesaggio* (also known as Bill Berdini-Movimento 5 Stelle), which provides for a division of the territory in three categories (urban, agricultural and natural areas). For critical comments, see E. Boscolo, *Il suolo come matrice ambientale*; also see S. Ronchi – S. Salata, *Limitazioni del consumo di suolo nell'ordinamento nazionale: riflessioni sulle proposte normative*, cit..

[122] Data available on the website of the Ministry of Land, Infrastructure and Transport, http://www.mlit.go.jp/common/000234477.pdf. For more details, apart from textbooks on Japanese urban law available in English, see AA.VV., *An Approach for Predicting Land Use Changes in an Urbanization Control Area - A Case Study of a Japanese Regional Hub City* , available at http://ideas.repec.org/p/wiw/wiwrsa/ersa05p415.html.

[123] S. M.Tariquzzaman, *Japanese Concept of Urban Promotion Control Area (UCA) to Save Agricultural Land in Bangladesh*, in *J. of Bangladesh Institute of Planners*, vol. 2, December 2009, p. 98-106, available at http://www.bip.org.bd/SharingFiles/journal_book/20130721152149.pdf. The author is fully conscious of the fact that the success of the model that was introduced in 1968 is strongly linked to historical, social and cultural local factors that characterize Japanese legislation.

[124] Every year, in Bangladesh, 1% of agricultural land is the object of transformation for urbanization purposes.

revision or - with reference to urbanization control areas - the selection of compatible and incompatible land uses, of land uses subject to authorization or requiring the approval of specific area plans, thus excluding traditional zoning techniques.

In the Eurozone, although urban planning legislations closely resembling the *line-drawning system* don't seem to exist, it must be noted that many legislations do provide for *Urban Growth Boundaries – UGBs* [125] and that many planning schemes pursue the ideal of "no land take" or impose quantitative spatial limits to urbanization processes. Thus many urban planning tools provide that additional building activity must be concentrated within city boundaries or in already developed areas[126]. Obviously, in the absence of general rules laid down at least at a regional level, such decisions fall upon single administrations.

5.5. Quantitative limits and the management of undeveloped areas: "Green belts", "green wedges" and peri-urban "trame verte et blue"

Green belts, which play an important role in the legislation of certain countries such as the United Kingdom, Germany and the Czech Republic, may be considered in terms of a quantitative-spatial land management approach[127].

As we know, the green belt concept was introduced in Germany in the '20s, was experimented by the City of London in the '30s and was subsequently, from 1955, extended to other British cities.

In the United Kingdom, in particular, as mentioned in the currently in force *Planning Policy Guidance Note 2* and the White Paper *Planning for a sustainable future*[128], green

[125] With regard to legislation using mechanisms aimed at limiting urban growth (*Urban Growth Boundaries-UGBs*) see paragraph 5.2. and relevant footnotes.

[126] In some Austrian regions, for instance, territorial plans have defined the external borders of each urban centre in order to contain urban development and sprawl. Local urban plans are required to clarify and implement these directives. Although in some regions (Lower Austria) the system has borne fruit, in others the results have been less encouraging. The main problem of effectiveness still remains: there is the problem of moving development and transformation activities from areas already earmarked for such a purpose to areas within a chosen perimeter, which are not on the real estate market (in these cases perimeters are not a satisfactory solution); another weakness are the non realistic estimates of future development which can also result in widening the borders of urban development; finally, even though the provisions of regional plans are binding, there are no measures that oblige municipalities to implement them, due also to their discretionary power as regards the protection of their interests and decisions on urban issues. It is hoped, therefore, that the introduction of maximum quantitative limits to residential uses of land will lead to a progressive decrease of land use and increase the effectiveness of regional territorial plans.

[127] Cf. European Commission, *Guidelines on best practice to limit, mitigate and compensate soil sealing*, SWD(2012) 101 final/2, cit..

[128] The document is available at :

belts are considered necessary tools for safeguarding sustainable development and, especially, for preventing development activities that are incompatible with combatting urban sprawl and the reuse of urban land.

In view of moving from the prospect of land take to that of responsible land use management, it is interesting to note that *green belts* have been complemented by other tools and are now included in more systematic and innovative planning schemes, among which *green wedge*s and other comprehensive approaches for a sustainable development in urban, rural and natural areas (PPS 7 – *Sustainable development in rural areas*; PPS I – *Delivering sustainable development* e PPS9 – *Eco-towns*).

The desired result should, therefore, be on one hand the close interconnection between green belts and green areas without overly isolating and circumscribing urban areas and, on the other, the intrinsic sustainability of all land uses, at least as far as possible. In this perspective, the stock of undeveloped areas does not only compensate for urbanization processes and their impact but is in itself important for the ecosystem and for protecting biodiversity.

This more complex approach is expressed by the French experience of "*trame verte et blue"* which is definitely the most complete legal strategy, particularly after the implementation of the *Loi Grennelle I* (2007) and the *Loi Grenelle II* (2010)[129]. Both these laws pursue the objective of integrating the principle of sustainable development in spatial and urban planning policies and tools. In particular, they have rendered the *trame verte et blue* a necessary point of reference for the *Plan local d'urbanisme (PLU)*[130] and its components, starting with the *Projet d'aménagement et de développement durable* (PADD) which determines strategic guidelines for social, economic, environmental and urban development of the territory; these strategies cover a period of 10-20 years and, thus go beyond the legal term of validity of the PLU[131].

---

http://www.officialdocuments.gov.uk/document/cm71/7120/7120.pdf.

[129] The French experience (that goes back, albeit in a rudimentary form, to legal provisions established in the '90s) was preceded by those of Belgium and the Netherlands .

[130] The PLU today substitutes the Plan d'occupation des sols - POS

[131] The Loi Grenelle II provided that the PADD, which has to be consistent with the PLU, must set the targets for urban development also in terms of containing land take. For further details, Comité national du développement durable et du Grenelle de l'Environnement (CNDDGE), *Rapport d'évaluation du Grenelle de l'Environnement*, October 2010, cit.; Ministry for the Environment, Sustainable Development, Transport and Housing – Centre des ressources documentaires Amenagement Logement Nature, *L'étalement urbain en France* - Summary, cit., 15; Commissariat général au développement durable (CGDD) - Service de l'observation et des statistiques (SOeS), *Urbanisation et consommation de l'espace, une question de*

In the new French planning system, compliance with of the principle of sustainable development - a principle that had already been introduced in planning legislation in 2000 but was strengthened by the *loi Grenelle II* -, is ensured by means of another planning tool: the *Schéma de cohérence territoriale* (ScoT).

This document aims, in particular, at solving one of the greatest problems facing soil management policies based on local urban plans, i.e. the lack of coordination between institutional bodies, public policies and the challenges they are called to solve: to do so it seeks to coordinate, at a supra local level, different development policies and to guide them towards sustainable development.

Combatting peri-urbanization, safeguarding and promoting biodiversity, balancing commercial activities, protecting agricultural land, reducing traffic, limiting greenhouse gas emissions: all these objectives have been integrated in legal tools used to contain, guide, plan and regulate spatial and urban development. It is important to note that, under French law, it's now possible to adapt the territorial scope of the SCoT for the specific purpose of complying with the objectives listed in the *Loi Grenelle II*[132]. More precisely, the territorial scope can be revised, when it emerges that it is not able to guarantee the effectiveness of the legal content and objectives of the ScoT: the revision can be triggered by the EPCI or the Government when in the public interest, and can also be requested by the Prefect who may initiate the proceedings for the approval of the ScoT if the lack of such a planning tool seriously hinders the coherence of public policies[133].

The French experience demonstrates that the existence of green belts in urban areas, although useful to a certain extent because they establish a balanced relationship between the city and the surrounding territory, is not enough to guarantee biodiversity and to ensure the necessary link between territories assigned to different layers of government.

---

mesure, cit..

[132] In the case of the EPCI (Établissement public de coopération intercommunale), the territorial scope of the PLU corresponds to the entire EPCI: thus, for example, the PLU of the Communauté urbaine de Lille of 2004 is applied to 85 municipalities in an overall territory of 611 km^2.

[133] A series of measures – introduced by the loi Grennelle II and subsequent Acts (*ordinance* of 5 January 2012) – have greatly simplified the approval process; other measures act as incentives in view of the generalized application of the law to all French municipalities by 2017: in this perspective, we can justify the limits to the revision of the PLUs or to the urbanization of areas defined after 2002 as urbanizable, or to natural areas as per L.122-2 del *Code de l'urbanisme*.

5.6. Quantitative-spatial limits and management of undeveloped land uses

Quantitative-spatial limits for land take and land use management focus mostly on urbanization processes. They take for granted the distinction between urbanized and non urbanized land and do not refer, at least not directly, to the management of non urbanized land.

Consequently, the management of non urbanized land is entrusted to a series of consolidated legal tools which exist in several legislations, i.e. regulatory standards introduced by sectoral legislations (landscape and agriculture, parks and natural areas), sectoral or spatial plans, usually falling within the remit of supra-local levels of government and binding for local planning authorities, traditional planning techniques (*zoning* and *regulations*)[134], as well as by the requirement of specific or special permits to change the use of undeveloped land to uses other than agriculture or forestry[135].

In this manner, the minimum "stock" of undeveloped land is guaranteed and can be increased by planning provisions and by regulating the use of undeveloped areas and/or by applying the quantitative limits for land take and land use management described above[136].

---

[134] Apart from Italian legislation, the same applies, for instance, in Austrian legislation where the identification of priority areas for agriculture in regional territorial plans is rendered effective by the fact that it is binding with respect to subordinated plans; the same applies in Slovenian legislation, where the identification of priority areas for agriculture depends on the territorial plan, while the whole sector is under the National Law on Agriculture (Official Gazette of the Republic of Slovenia, Law no. 59/96, as modified by Law no. 55 del 2003).

[135] In Poland, for example, the conversion of rural areas with soil belonging to classes I-III to uses other than agriculture requires the approval of the Ministry of Agriculture and Rural Development, when this transformation involves an area larger than 0,5 ha, while the conversion of forest land requires the approval of the Ministry of the Environment. A similar mechanism exists in Japanese legislation regarding transformations in UCA zones larger than a certain size.

On the contrary, the experience of the *American Farmland Trust* differs in that it allows farmers, through funding programmes, to protect agricultural land permanently, without losing ownership of the land. The owners of agricultural land – and their heirs and successors – commit themselves to using the land only for agricultural purposes. In Pennsylvania, this programme has made it possible to protect 1500 farms and a total of 180.000 hectares. These programmes were accompanied by fiscal incentives: for instance, always in Pennsylvania, the Clean and Green Program or the Current Agricultural Use Value (CAUV) programme in Ohio, continued to protect green and forest areas through a system of taxation calibrated on use value and not on market value. The savings thus generated helped to preserve the land, including agricultural land, from urbanization.

[136] We must bear in mind that such decisions are subject to an increasingly stricter judicial review when they are disproportionate with predicted economic and demographic development or inconsistent with the objectives indicated in the framework documents included in higher level plans or the local urban scheme: as regards the case of Italy, B.L. Boschetti, *La discrezionalità delle scelte di pianificazione generale tra fatti e limiti normativi*, comment to Tribunale amministrativo regionale- Lomabardy Region (Brescia), section I, decision 28 June 2011, no. 951, in Urbanistica e appalti, 2011, no. 11, 755-761; in France, monitoring the consistency and compatibility between urban documents by an administrative court judge has become much stricter: for a summary of case law, G. Pellissier, *Le projet d'aménagement et de*

Undeveloped (non urbanized) areas should be analyzed from a functional point of view, rather than only as a stock of empty and untaken land.

In general, we can say that undeveloped areas are compatible with a large variety of eco-system services and human functions, much more than urban areas. These eco-system services and functions obviously depend on the uses the soil is put to.

However, it has to be noted that planning tools are not always able to regulate/manage the use of undeveloped land[137]. For instance, in the case of agricultural areas, there exists a wide variety of permitted uses which, however, have a very different impact on land: uses such as the construction of parking lots[138] or sports complexes or golf courses or greenhouses may all be authorized but they will have very different impacts on soil. Moreover, we have to bear in mind that the monitoring of these uses is often uncoordinated as it depends on decisions taken at a local level. For this reason, some national legislations have attempted to standardize the uses that are permitted within undeveloped areas and to subject certain land uses to authorization[139].

At this point it should be made clear that, in absolute terms, there are no absolutely good uses or uses that are absolutely better than others.

---

développement durable (PADD), available at www.gridaus.fr.

[137] An interesting case (see the recently adopted urban scheme of the Municipality of Varese) is that of plant nurseries or gardening centres, often situated in agricultural sites.

The American doctrine, already since 1960, has been criticized due to the inadequacy of the *Zoning Ordinances* with respect to the vast areas involved and, in particular, with respect to the areas outside consolidated cities, characterized by a very small number of transformations. It had already been noted then that certain integrated development operations were difficult to manage by means of regulatory mechanisms conceived for single lots (lot-and-block restrictions) and that the increasingly more complex urban system could not be managed on the basis of abstract and general decisions. See, D.R. Mandelker, *Delegation of power and functions in Zoning Administration,* 1963 Wash. U. L. Q. 060 (1963), pp. 63-64, available http://digitalcommons.law.wustl.edu/lawreview/vol1963/iss1/4. For more details, S. Moroni, La città responsabile, cit. 61.

[138] Cf. Tribunale amministrativo regionale, Sardinia Region, decision no. 926/2011, which states "*there is no prejudicial incompatibility between the agricultural use of an area and its use as a parking lot …; hence, it is not an obstacle to the establishment of buildings which are not meant for residential purposes and which, on the contrary, prove to be, for obvious reasons, incompatible with residential areas and consequently must be built in the open country*".

In France, the Loi Grenelle II enhanced the vocation of zone A as a natural area (cf. new Articles. R. 123-7 and R. 123-8). In this respect, it is significant that the Conseil d'Etat enhanced the judicial review on zoning decisions: consequently, the Decision of 31 March 2010 (no. 313762) provides that the establishment of a micro zone N within zone A is illegitimate when this zone does not fulfill "*l'objectif de protection soit des milieux naturels et des paysages, soit d'une exploitation forestière, soit des espaces naturels auquels il est subordonnée* [...] *l'institution de zones N*", in line with Art. R. 123-8 of the Code de l'urbanisme. Art. R.123-9 of the Code de l'urbanisme defines the structure of urban regulation: despite the fact that municipalities are free to determine its contents, the Code is, in any case, an attempt at uniformity for the laws on the use of urban zones. Each of these laws must, moreover, be justified in the Rapport de présentation (Art. R.123-2 of the Code de l'urbanisme).

[139] From this viewpoint, Japanese legislation is very interesting.

Let us consider, for instance, the use of undeveloped land for agriculture[140]. Agricultural use is deemed compatible with soil characteristics and functions[141]. This, however, is not entirely true considering that the use of pesticides and fertilizers in agriculture has become one of the major causes of ground pollution, that certain farming methods result in soil compacting or in the reduction of organic matter, that certain crops produce significant Co2 emissions, reduce biodiversity and carbon storage[142].

EU legislation takes account of all these issues as is demonstrated by the fact that, under the CAP 2014-2020, aid is granted to agriculture subject to the fulfillment of certain "environmental" conditions.

Contradictions exist, however, also in EU legislation. The European Parliament recently modified its position with regard to first generation biofuels (in favour of second generation biofuels)[143], because of dangers linked to the greenhouse effect of biomass production, the reduction of farmland for food production, the reduction of biodiversity, the increase of *land grabbing* phenomena (especially in developing countries).

Another problem is the (scarce) effectiveness of traditional land (and land use) management legal tools.

This gap is the result of many factors: one of these factors is certainly the ineffectiveness of zoning and the low efficacy of planning and other legal tools in guiding

[140] Some legislations give a definition of agricultural use: see, for example, in German legislation, paragraph 201 Baugesetzbuch (BauGB), as well as, in regional legislation, the urban laws of the State of Baden-Württemberg.

[141] The same can be said for the use of undeveloped areas for forestry: forests are undoubtedly vital areas but have to be monitored, maintained, cleaned because otherwise they will expand to the detriment of agricultural and even urban areas. In this context, see the proposed law of the Region of Liguria for the establishment of a Regional Bank for the Land and the management of abandoned forest/agricultural areas, and Regional Law no. 4/99 (*Norme in materia di foreste e di assetto idrogeologico*), as modified by L.R. no. 9, 20 and 40 of 2013, that encourage the involvement of private persons in the exploitation of forest areas, also for agricultural activities.

[142] Cf. data related to the use of pesticides in agriculture during the 1950-2010 period (increase: 0-300%) presented during the Conference *Planet under pressure* 2012 and available at http://www.planetunderpressure2012.net..

[143] Article 17 of Directive 2009/28 EC, on the sustainability of biofuels, limits the possibilities of converting certain types of land for the production of biofuels from agriculture: primary forest and other wooded land, areas designated by law for nature protection purposes or for the protection of rare ecosystems and species and highly biodiverse grassland**.** It also provides that biofuels and bioliquids produced from raw materials cultivated within the Community should comply with Community environmental requirements for agriculture, including those concerning the protection of groundwater and surface water quality, and with social requirements. On the effects of direct and indirect land use changes in the Brazilian energy security plan (D. Lapola et al., *Indirect land-use changes can overcome carbon savings from biofuels in Brazil*, 2010, available at http://www.pnas.org/content/107/8/3388.full.pdf+html) and *amplius, retro* footnote no. 40.

development processes[144], as well as the lack of data, or rather, the fact that all the available information is often not integrated in the decision-making processes. As already mentioned, these problems are far-reaching and affect particularly certain land management approaches and objectives, starting from the reuse of *brownfields*.

Several legislations have attempted to provide answers to some of these problems[145].

At this point, it's interesting to note that in some legal systems the designation of agricultural areas or of areas where the change of use is subject to authorization, is based on the real demand for agricultural land as well as on soil characteristics and the functions it can best perform, also taking account of economic factors. This approach, which is conditioned by the *standards* set by environmental protection legislation, allows for greater flexibility compared to more abstract zoning techniques or other measures for preserving agricultural areas[146].

6. Points of convergence: the role of spatial and urban planning

What emerges from this analysis is a mixed set of land management approaches, in terms of both legal tools (cross-type) and areas of intervention (inter/cross-sector). Thus, the most striking fact [147] is the progressive intersection between the various public policies that impact on soil and land protection and management, the most important being spatial and urban planning, agriculture, environmental protection, landscape protection, housing policies, industrial and development policies, transport policies.

---

[144] Cf. Tribunale amministrativo regionale, Sardinia, decision no. 926/2011, quoted, which states that "*administrative case law has, indeed, clarified that the designation of an area as agricultural, where environmental and landscape considerations do not exist, does not impose a specific type of actual use, as its main objective is to avoid urban settlements; hence, it does not impede the construction of buildings not related to residential housing which, on the contrary, prove - for obvious reasons - to be incompatible with urban areas and which thus have to be constructed in the open country*".

With reference to the Austrian system, where the designation of priority areas for agriculture has called into question binding regional spatial plans, it emerged that the effectiveness of such plans depended largely on the decisions taken at a local level. See, W. Lexer, S. Huber, A. Kurzweil, *Urban Soil Management Strategy, Existing soil management approaches within urban planning procedures*, cit., 82.

[145] A system of mapping and listing agricultural land was introduced in Slovenia (National Law on Agriculture no. 59 of 1996 and ff. amends. and revs); the Czech Republic (National Law on soil protection, no. 220/2004, Law no. 219 of 2008 supplemented by Decree no. 376 of 2008).

[146] See, as regards Italian legislation, Bill no. 948 which aims at reducing agricultural land take by determining the maximum area of agricultural land that can be used. This approach, apart from being unclear (given that land take does not exclusively regard agricultural areas), does not provide a definite solution for reducing land take and identifying the maximum agricultural area that can be used.

[147] Cross-type integration is , at least in part, a direct consequence of the principle of legality.

However, it has to be said that this approach is still uncertain and uncoordinated at least in the Eurozone.

The uncertainty is due to the fact that, in the absence of a clear legislative framework, the process is conditioned by highly arbitrary political and/or administrative decisions. On the other hand, the lack of coordination is due to the fact that, even when these decisions aim at neutralizing the impact of land take and achieving better land use management, their content is not homogeneous, they produce effects only on limited territories and their effectiveness depends even on other political and/or administrative decisions taken at other levels of government.

In this context, planning authorities and spatial and urban planning policies play a primary role[148]: not so much because development depends, to a large extent, on decisions taken by planning authorities, but because the regulatory tools linked to these policies – regulations, spatial and urban plans, programmes, agreements, building permits, etc. -, seem to be the most appropriate for implementing and coordinating land management approaches within the framework of different sectoral policies.

Among all the spatial and urban regulatory tools, local urban plans are the ones mostly used by public decision-makers in order to promote, according to a coordinated and integrated approach, various objectives and strategies linked to different policies and sectors.

However, the increased importance currently given to spatial and urban planning is a new (and critical point of departure rather than the solution for achieving a more efficient and effective land use management policy.

Therefore, it is necessary to reflect upon the data that emerge from the empirical analysis and, in particular, on the importance of spatial and urban plans in land use management policies.

In order to fulfill the requirement of coordinating certain sectoral public policies that deal with land and land use management, urban plans and other development regulatory

[148] The research carried out by Lexer,S. Huber, A. Kurzweil, *Urban Soil Management Strategy, Existing soil management approaches within urban planning procedures*, cit., demonstrates that in the legal systems taken into consideration, 15 measures for combating land take out of 47 were introduced directly through territorial and urban planning; 13 out of 47 were introduced by laws in this sector and implemented through urban planning tools. A summary of the research is available at http://www.urban-sms.eu/fileadmin/inhalte/urbansms/pdf_files/final_results/22_Environmental_impact_of_urban_soil_consumption.pdf.

tools seem to be the perfect and most appropriate solution because of their broad scope, even though their impact is often not decisive, not to say ineffective.

There is also a need for new land and land use management approaches: this need can hardly be fulfilled by urban planning as, even when innovative solutions and best practices are introduced, their impact is limited and often unpredictable .

Although they constitute an exception in modern multi-level legal systems due to their discretionary nature and broad scope of objectives, paradoxically these very characteristics render spatial and urban plans extremely useful for managing land and land use. However, for the reasons given above, spatial and urban planning tools are not fully equipped for implementing a responsible land and land use management policy.

7. Conclusions

The multidimensional, relational and dynamic nature of land makes it impossible to keep spatial and urban planning and land use regulatory decisions separate from sustainable development challenges.

For this reason, it is necessary to review in depth all land-related sectoral legislations starting from spatial and urban planning law.

We believe that the first thing that has to be re-examined and strengthened is the effectiveness of land use and land management regulatory tools within the framework of land management policies: the inability of zoning regulations and planning tools to guide land transformations; the problems created by certain traditional land use regulations (i.e. minimum lot size index) and by an excess of *standards and regulations,* the inadequacy of certain current mechanisms for financing essential facilities and public infrastructures (some of which foster urban sprawl), the contradictions emanating from compensation mechanisms (that call for new development operations). All the above are factors that hinder the implementation of responsible and effective soil management policies.

Secondly, land and land use management approaches shall be shaped according to the real importance of the assets and interests they represent. It is not surprising, therefore, that the introduction of sustainability in urban planning legislation has resulted in a redefinition of institutional boundaries, overcoming their structural rigidity, and has introduced sustainability issues into planning tools. It is not just a matter of coordinating

decisions regarding land use but of redefining the relationship between institutional levels and public policies, reassessing the objectives of legal tools, guaranteeing sustainability without resorting to strict and uniform legislative regulations [149].

What has to be pointed out is that the inadequacy of current land use management approaches proves how difficult it is for decision-makers, even at a supra-national level, to determine the correct or at least acceptable balance between access to and use of a huge variety of primary goods and related rights and interests. We believe that this inadequacy reduces land to a mere field of (private and public) action and deprives it of its multidimensional and ecosystemic dimension.

.

[149] It is certain, however, that the centralizing tendency of public soil management policies does not prevent the existence of a system of rules and political/administrative decisions: in this context a crucial contribution is the study by Ostrom of the so-called *nesting principle*, E. Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action.* Cambridge: Cambridge University Press, 1990, 101 ff.; Id., Design Principles of Robust Property Rights Institutions: What Have We Learned? In *Property Rights and Land Policies,* eds. G. K. Ingram and Y.-H. Hong, 25-51. Cambridge, MA: Lincoln Institute of Land Policy, 2009; see also, G. R. Marshall, Nesting, Subsidiarity, and Community-based Environmental Governance Beyond the Local Level. *International Journal of the* Commons, 2008, 2, 75 ff., available at www.thecommonsjournal.org.